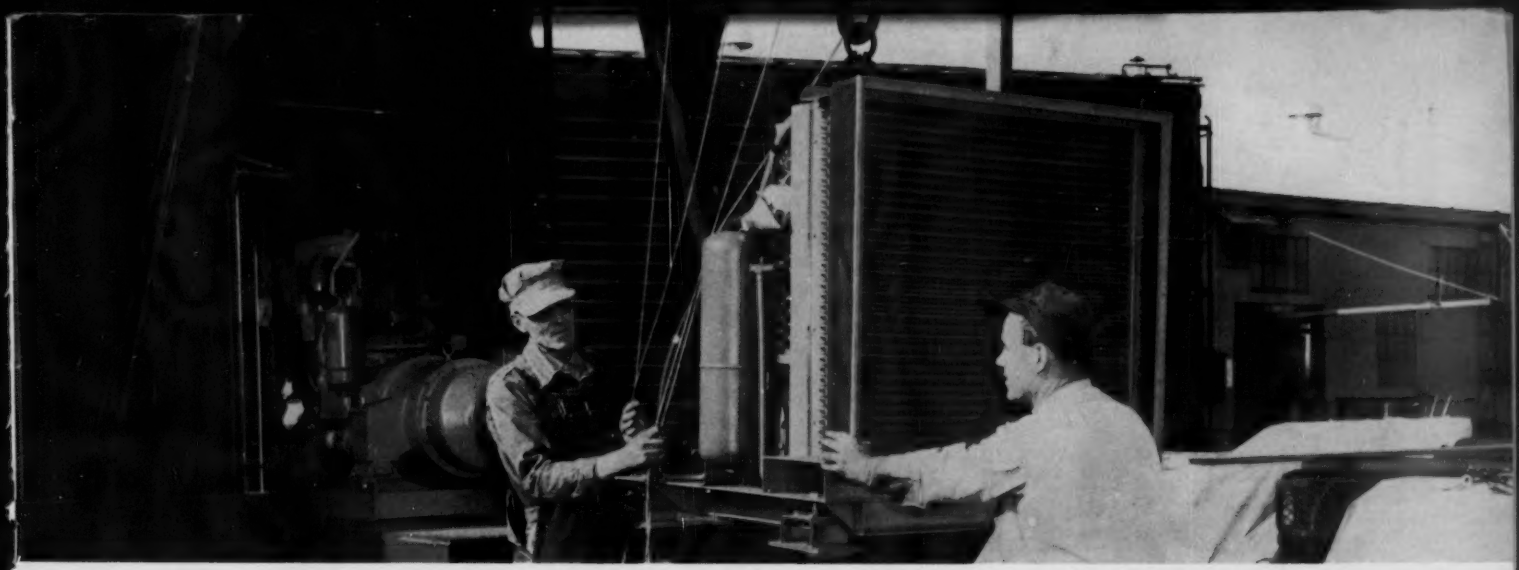

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RAILWAY LOCOMOTIVES AND CARS

A SIMMONS-BOARDMAN TIME-SAVER PUBLICATION JUNE 1958

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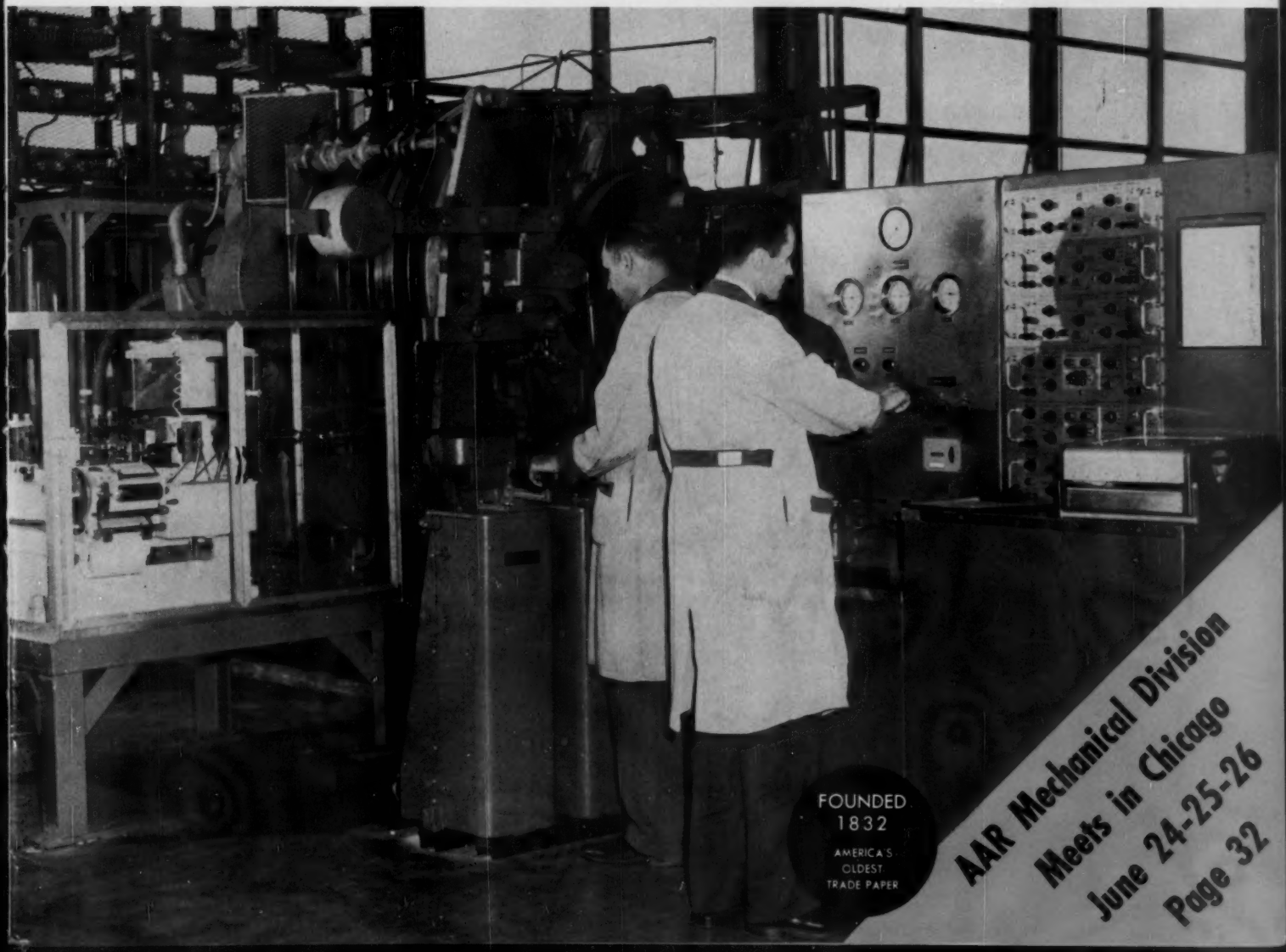

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AAR Mechanical Division Meets in Chicago June 24-25-26 Page 32

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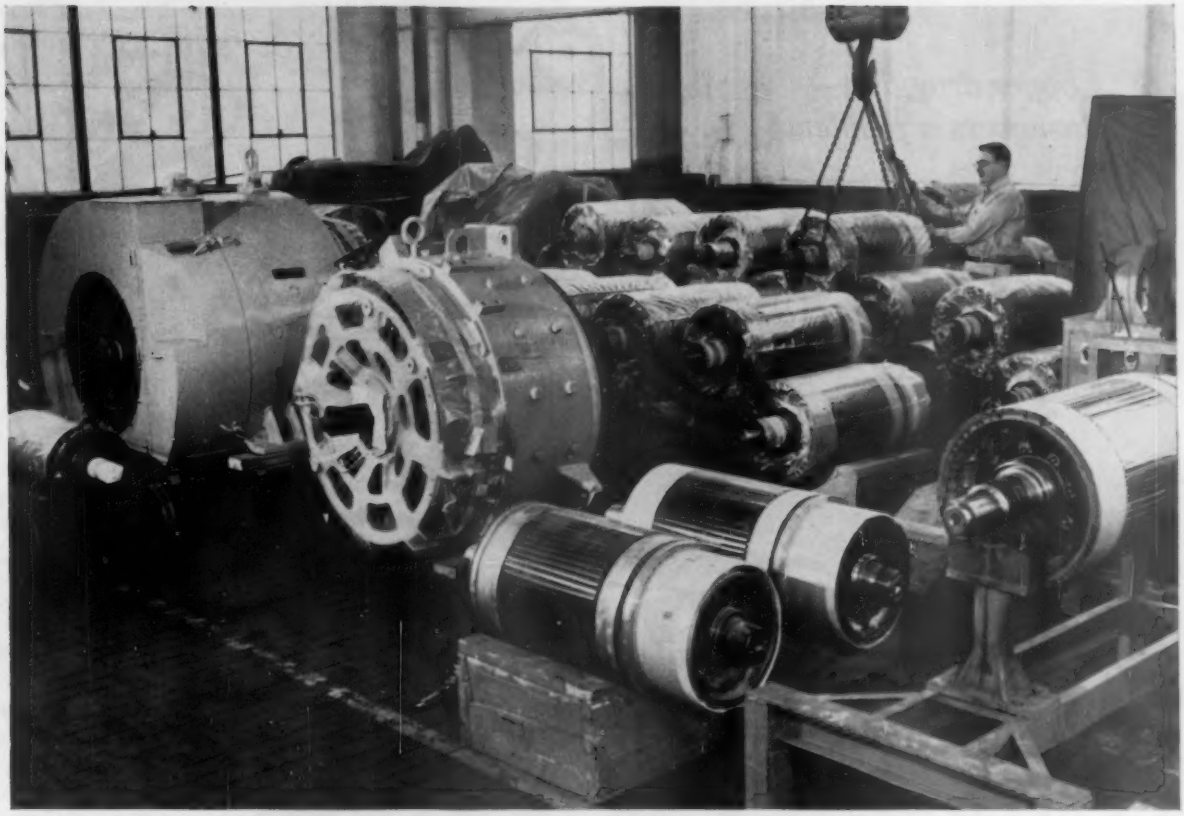

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The Oldest Trade Paper
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BRANCH OFFICES: 79 West Monroe Street, Chicago 3; 1081 National Press Bldg., Washington 4, D. C.; Terminal Tower, Cleveland 13; 530 Sixth Avenue, Pittsburgh; 214 Terminal Sales Bldg., Portland 5, Ore.; 244 California Street, San Francisco 4; 1151 West Sixth Street, Los Angeles 17; 3908 Lemmon Ave., Dallas 19, Tex.

FOREIGN REPRESENTATIVES: Sibley-Field Publishing Company, Ltd. 8/9 Clerkenwell Green, London E. C. I. England; Georg J. Linder, Continental European Representative, (16) Frankfurt a.Main Wittelsbacher Allee 60 West Germany.

ABC

Railway Locomotives and Cars is a member of the Audit Bureau of Circulation (A.B.C.) and is indexed by the Engineering Index Service. Printed in U.S.A.

Published monthly by the Simmons-Boardman Publishing Corporation. James G. Lyne, Chairman of the Board; Arthur J. McGinnis, President and Treasurer; Fred A. Clark, Vice-Pres. and Sec.; George Dusenbury, Vice-Pres. and Editorial and Promotional Director. Entered as second-class matter January 16, 1953, at the Post Office at Philadelphia, Pa., under the act of March 3 1879. Subscription price to railroad employees only in U.S. possessions and Canada, $2 one year, $3 two years, payable in advance. Subscription price to railroad employees elsewhere, $8 per year. Single copies, 75¢.

TIME-SAVING IDEAS FOR

JUNE 1958

Volume 132 • No. 6

MOTIVE POWER AND CAR

PFE Expands Mechanical Reefer Fleet 27
Pacific Fruit Express is spending $20,000,000 to build 1,000 mechanical refrigerator cars, including its first "all purpose" units.

Norfolk & Western Uses Automatic Nailers 29
Mechanized nailing on the light repair track at Roanoke, Va., has reduced the cost of relining box cars and speeded the process.

SP Terminal Speeds Diesel Servicing 30
At Houston, Tex., new service facilities, rearranged track layout, and a new shop building have cost over $600,000.

Program for 1958 AAR Meetings 32
The Mechanical Division and the Electrical Section will hold their annual three-day sessions at Chicago on June 24, 25 and 26.

How the Mechanical Division is Organized 33
Standards for construction and maintenance of railroad rolling stock are the responsibility of this industry group.

Mechanical Research Moves Ahead 35
Even though some AAR expenditures have been reduced, research activities are being continued at the 1957 level.

Latest Electrical Equipment Exhibited 40
Railway Electric Supply Manufacturers are holding an exhibit in Chicago in conjunction with the Mechanical Division and Electrical Section meetings.

EMD Applies 26-L Locomotive Brake 42
Milwaukee Road road-switchers and a new export locomotive have been the first GM units to get the new Westinghouse air brake equipment.

ELECTRICAL

Banding Armatures With FRP Tape 48
Fiberglas-reinforced plastic tape has the mechanical and electrical qualities for traction motor armature banding, and Westinghouse Electric is doing it.

Putting Locomotive Performance on Record 52
Rock Island shop has the equipment for making a complete record of each locomotive load test and these records are filed for future reference.

Test Stand Checks Generators and Regulators 55
Auxiliary generators and voltage regulators are tested and adjusted on a shop-developed unit at the Burlington's back shop.

The Diesel Ran Without Fuel 55
Our April "Diesel Maintainers Notebook" described a locomotive failure which has been further clarified by this month's Letter to The Editor.

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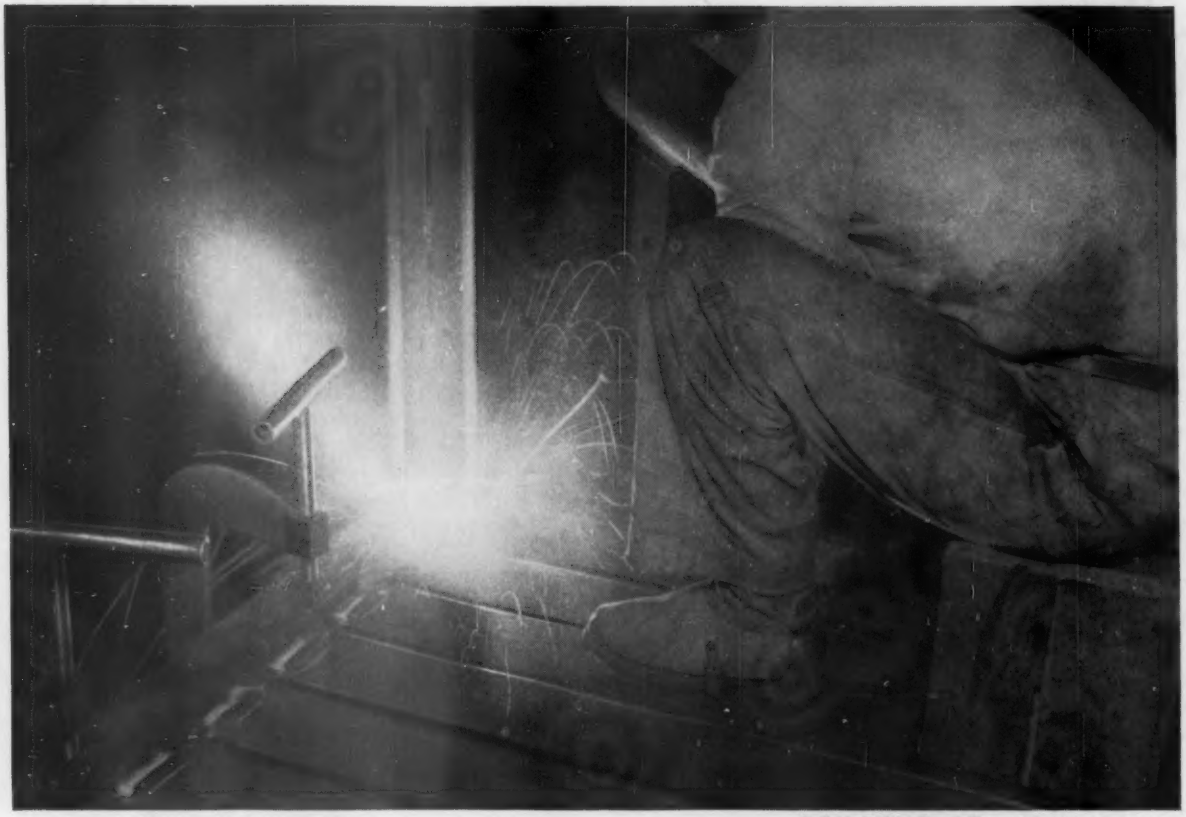

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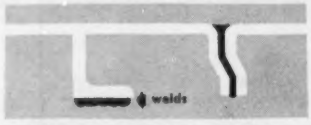

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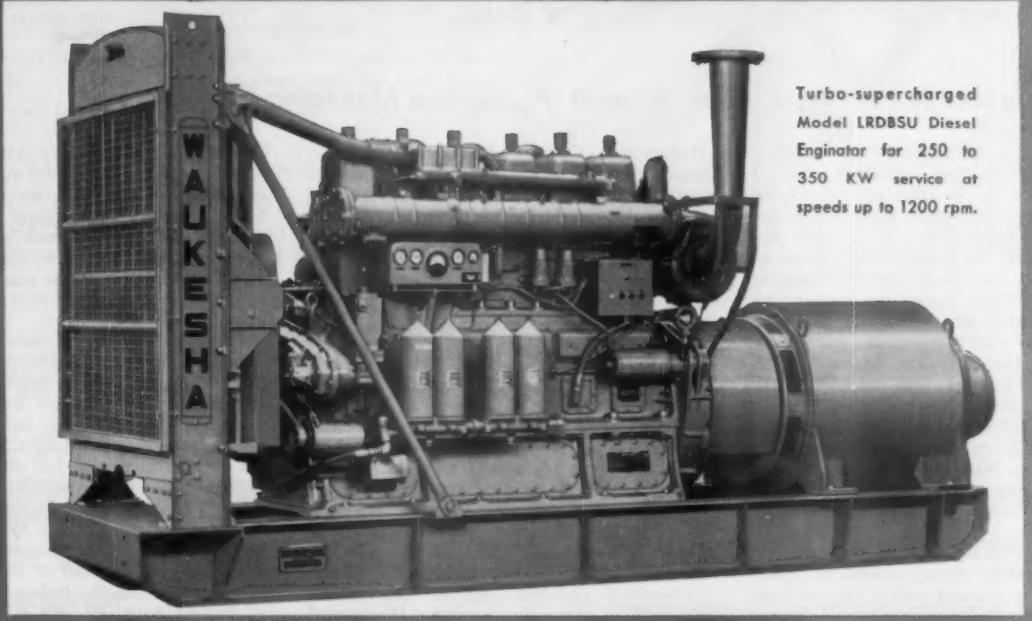

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LOCOMOTIVES AND CARS REPORT FOR JUNE

H. C. Wilcox

C. L. Combes

F. N. Houser

Combes Succeeds Wilcox as Editor; Houser Appointed Managing Editor

Harold C. Wilcox retired May 31 as editor of Railway Locomotives and Cars after 34 years of service on the editorial staff of this paper. Charles L. Combes, managing editor, has been appointed editor to succeed Mr. Wilcox. Frederick N. Houser, associate editor at New York, has been named managing editor. Mr. Wilcox joined the staff of this magazine in 1924 as associate editor after several years of experience in the mechanical department of the Delaware, Lackawanna & Western. In 1925 he was transferred to Cleveland as editorial representative both of the Railway Age and Railway Locomotives and Cars (then Railway Mechanical Engineer). Returning to the New York office in 1933 he became managing editor in 1948 and succeeded C. B. Peck as editor when the latter retired in 1954.

While Mr. Wilcox has been active in several engineering societies and in many organizations associated with the railroad industry he has always taken a special interest in serving and promoting the Locomotive Maintenance Officers' Association. He was largely responsible for keeping this association and its predecessor, the International General Foremans' Association, operating during the depression years of the thirties. Since then he has helped to build it to its present important status as an outstanding mechanical department organization serving the railroad industry.

To his many friends who may ask what Harold's plans are for the future it is safe to answer that he will continue to be associated with the railroad industry in some capacity. However, he has many hobbies and interests; he is a collector and a user of guns and fishing equipment, an excellent man with machine tools, a good photographer, and more important, an extrovert with friends in every part of the United States and Canada. Harold will continue to make his home at Pines Lake, New Jersey.

Charles L. Combes, the new editor, joined the staff of the then Railway Mechanical Engineer in 1939 as associate editor. After serving 1941-1945 in the Army, he returned to his editorial job after the war. In 1948 he became managing editor and later editor both of the Locomotive and the Car Builder Cyclopedias. He returned to the staff of Railway Locomotives and Cars as managing editor on March 1 of this year. (His biography appeared in the April, 1958 issue of RL&C page 14.)

Frederick N. Houser became an associate editor of Railway Locomotives and Cars at New York in 1955. A native of Stoneboro, Pa., he entered Carnegie Institute of Technology in 1943, but his college career was interrupted by service in the Army. Following the war he continued his studies, graduating in 1947 from Carnegie Institute with a B.S. in M.E. He was employed from 1948 to 1954 by the Bessemer & Lake Erie as draftsman, special engineer and enginehouse foreman. Before joining the staff of this magazine Mr. Houser was with the Babcock & Wilcox Co. at Beaver Falls, Pa. He is a licensed professional engineer in the State of Pennsylvania.

ICC Train Brake Jurisdiction Is Effective August 9

The Interstate Commerce Commission has ordered all railroads operating in interstate commerce to observe and comply with rules, standards and instructions governing the installation, inspection, maintenance and repair of all power or train brakes, effective August 9, 1958.

The order is a result of action by Congress on April 11, 1958, directing the ICC to establish such rules. It was directed to adopt initially the rules of the Association of American Railroads and put them into effect within 120 days after the date of enactment.

The rules will be published in the Federal Register as sections 132.10 to 132.17 of Part 132, Tile 49, under the title "Rules for Inspection, Testing, and Maintenance of Air Brake Equipment."

Transit Problems AIEE Topics

Engineering problems in the design and operation of recently developed rapid transit equipment will be the subjects of discussion at two technical sessions sponsored by the Land Transportation Committee of the AIEE at the summer general meeting in the Statler Hilton Hotel in Buffalo on June 24.

For the morning session the program is: Regenerative Braking, by A. W. Manser, London Transport Executive; History of Dynamic Braking, by B. A. Widell and H .H. Henell, General Electric; Air and Regenerative Braking, by C. H. Hines, Westinghouse Air Brake.

At the afternoon session the following will be presented: Semi-Conductor Battery Charger for Rapid Transit Cars, by E. W.

(Continued on page 14)

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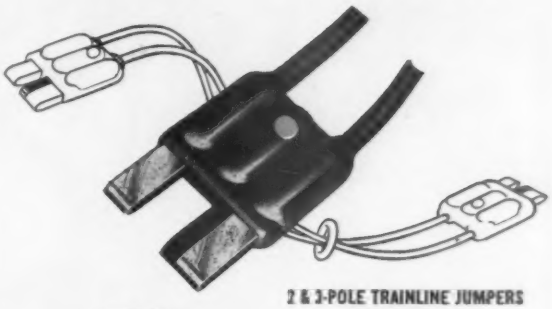

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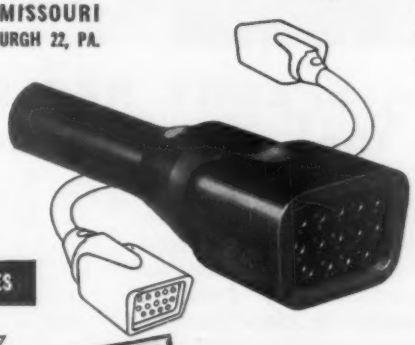

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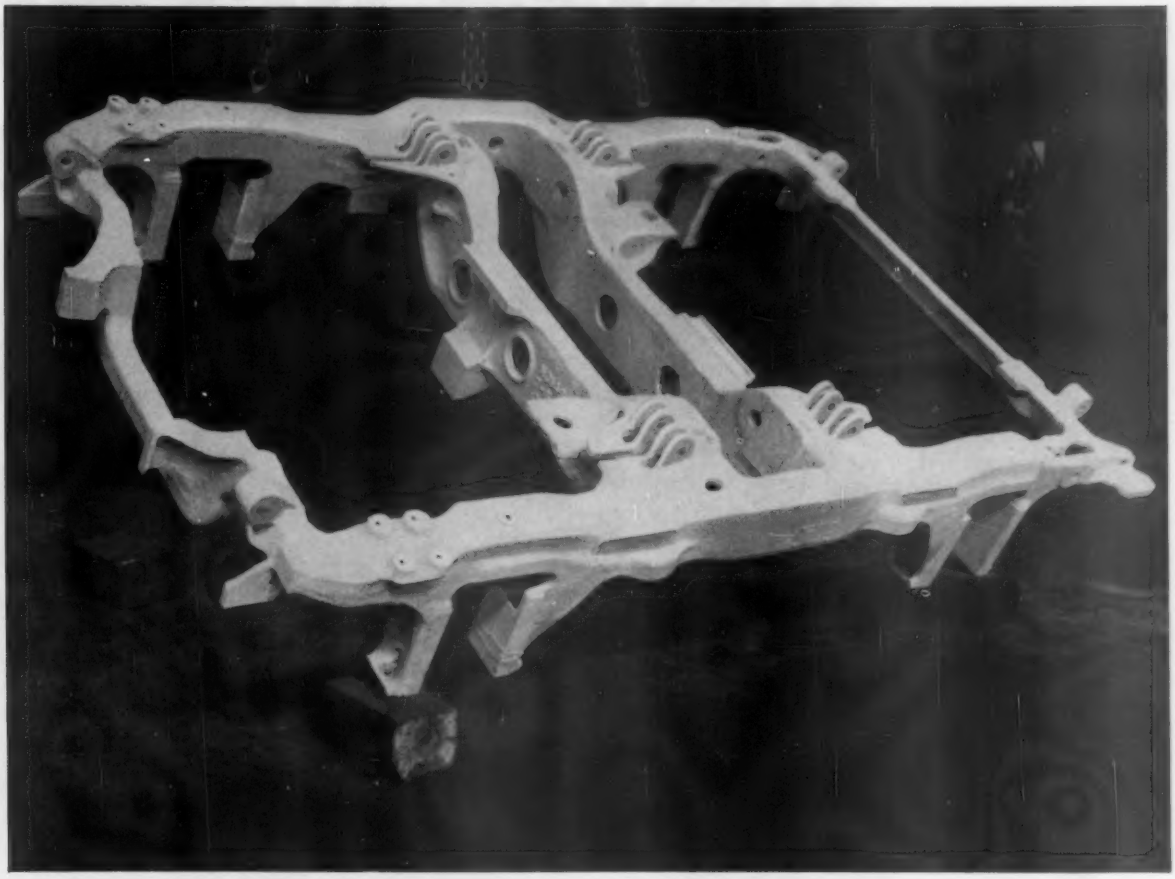

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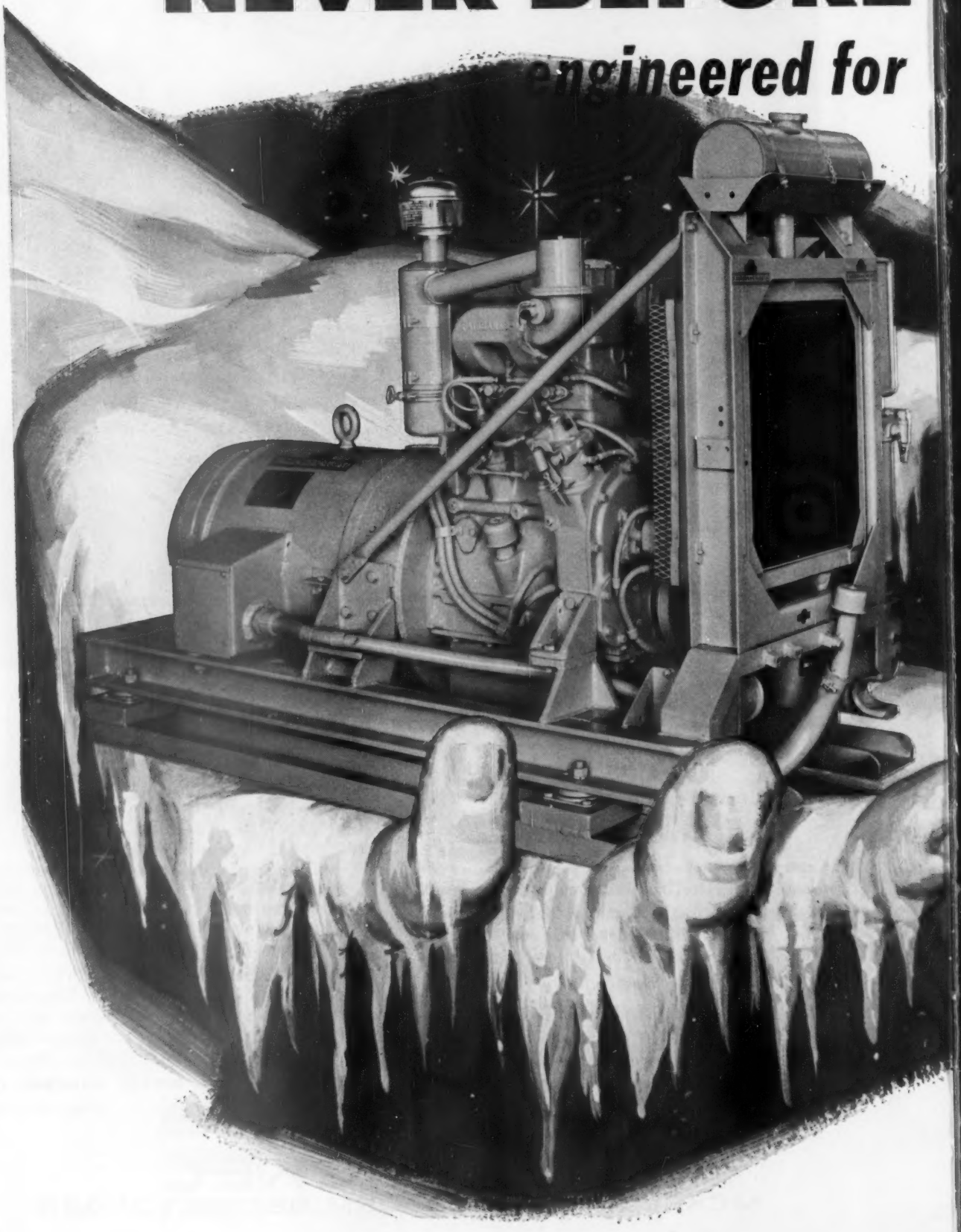

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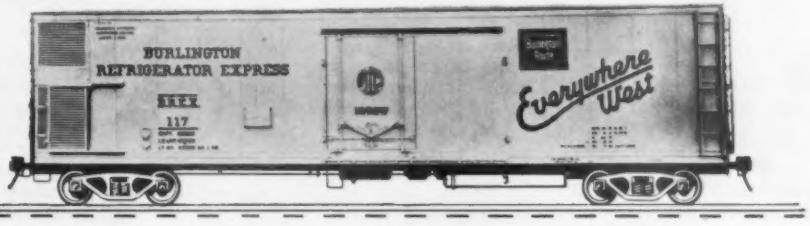

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REPORT FOR JUNE—*Continued from page 8*

Ames, Westinghouse Electric; Modernization of Rapid Transit Car Control Equipment, by G. P. Purifoy, Westinghouse Electric; and Effect of High-Performance Rapid Transit Cars on Traction Substations, by E. J. Hogan and J. C. Price, General Electric.

National Railroad Apprenticeship Conference

The second annual National Railroad Apprenticeship onference to be held in St. Louis, Mo., will convene at the Statler-Hilton Hotel, July 16, 17 and 18. The tentative program for Thursday morning, July 17, calls for the discussion of (1) Use of Visual Aids and related instruction, and (2) Records and Record Keeping Systems. Ideas concerning the training of instructors will be discussed at the afternoon session. On Friday, July 18, officers of the Railroad Retirement Board will explain the over-riding benefits of railroad retirement as compared with Social Security benefits which a young man may look forward to receiving eventually.

In order to give recognition to apprentices in the railroad industry the apprenticeship conference is asking the railroads to select an outstanding apprentice from each craft to receive an award at the St. Louis meeting. In making the selection, the following guide is to be used: (a) The apprentice should be either in the sixth, seventh, or eighth period of his apprenticeship and be an active apprentice on the date of the conference; (b) consideration should be given to performance attendance, attitude, progression on the job and in the classroom, and general all-around development of skill.

CNR Tests European Trucks

German-built passenger-car trucks with a new suspension system are being tested by the Canadian National. The all-welded, fabricated trucks are built by West German Carbuilders (Westwaggon), represented in Canada by the International Equipment Company.

The CNR has bought one car set of the German units and has been testing it on the Montreal-Toronto run. Railway mechanical experts are reported to have been impressed with the performance.

A car set of units somewhat similar to the Westwaggon products has been ordered by the CNR from another European firm, the Schindler Carriage & Wagon Co. of Switzerland. The trucks were tested in Switzerland before being shipped to Canada. They will be installed under a car for Canadian tests soon.

Orders and Inquiries For New Equipment

Only one railroad has placed orders for new equipment since the closing of the May issue. The Chicago, Milwaukee, St. Paul & Pacific has ordered 100 50-ton Airslide covered hopper cars and 500 50-ton box cars from General American and 500 50-ton box cars from Pullman-Standard, all for fall delivery.

However, the *Chicago & Eastern Illinois* is in the market for 1,000 hopper cars and may need still more before the end of the year, according to D. O. Mathews, president of the road. The *Chicago, Rock Island & Pacific* will convert 10 70-ton gondola cars to covered coil cars. Twenty similar cars are already in service. The *Lehigh Valley* plans to convert 37 55-ton hopper cars into flat cars for piggyback service. The *Northern Pacific* will place in service during 1958, 150 rebuilt logging cars and 200 stock cars converted from auto and box cars.

The *Central of New Jersey* has acquired four Budd RDC's from the New York, Susquehanna & Western.

Thread Machiners Claim Waste Cuts Cleaning Costs

Cotton thread wiping waste absorbs up to three to four times its own weight of oil. This was developed during a series of tests carried out by the Robert W. Hunt Co. for the Institute of Thread Machiners. The results of the laboratory tests confirm the greater absorption capacity of wiping waste compared with wiping cloths, according to W. R. Compton, executive director of ITM.

Samples were conditioned at 70 F and 65 percent relative humidity for 24 hr before testing. No. 1 colored cotton-thread waste absorbed SAE 10-20 oil to the extent of more than 400 percent of its conditioned weight. ommon wiping cloths absorbed less than 140 percent of their weight.

Good quality waste costs less initially, Mr. ompton said, and it can be used effectively longer than cloth or rags.

Hoglund Elected President AWS

Gustav O. Hoglund, head of the Welding Section of the Aluminum Company of America Process Development Laboratory, has been elected president of the American Welding Society. Charles I. MacGuffie, manager of marketing of the Welding Department of the General Electric Company, has been elected first vice-president of the society.

Personal Mention

Bangor & Aroostook.—*Derby, Me.:* FRANCIS D. MURPHY, JR., appointed assistant mechanical superintendent, succeeding FRANK E. BAKER, retired. HAROLD W. HANSON appointed mechanical engineer, succeeding Mr. Murphy. DANA D. LOVELL appointed freight car foreman. HOLLIS E. CLARK appointed foreman car inspector, succeeding Mr. Lovell.

Boston & Maine.—*Westboro, N.H.:* HARRISON C. COOK appointed general foreman, New Hampshire engine terminal, succeeding ALBERT L. WOOD, retired.

Canadian Pacific.—*Penticton, B.C.:* L. F. CAMPBELL appointed locomotive foreman, succeeding J. MCGOWAN, retired. Moose Jaw, Sask.: R. M. NEIL appointed No. 1 shop foreman, succeeding Mr. Campbell. G. C. MYLES appointed relief foreman, succeeding Mr. Neil. Formerly No. 2 shop foreman, Kenora.

Chesapeake & Ohio.—*Richmond, Va.:* A. N. GILBERT appointed assistant to superintendent motive power, succeeding W. V. MOSELEY, retired. *St. Thomas, Ont.:* E. W. LOCKE, supervisor diesel locomotives, appointed mechanical supervisor, with jurisdiction over all mechanical matters on Canadian division, succeeding O. T. BUTCHER, retired.

Missouri Pacific.—*Dupo, Ill.:* M. H. LOSCH, master mechanic, retired.

Pennsylvania.—*Pitcairn, Pa.:* E. L. ARMS, appointed assistant enginehouse foreman. Formerly assistant enginehouse foreman at Enola, Pa.

Southern.—*Ludlow, Ky.:* GEORGE L. SOUTHER, JR., appointed master mechanic. WILLIAM W. WALLACE appointed general foreman. *Spencer, N.C.:* JACKSON B. YONGE appointed general foreman. MILTON S. RUBLE appointed foreman. *Chattanooga, Tenn.:* GILBERT B. HELTON appointed general foreman, system assembly shop. *Atlanta, Ga.:* ROBERT R. RAY, JR., appointed general foreman, Inman Yards. ROBERT B. MOWERY appointed assistant foreman. *Coster Shop, Knoxville, Tenn.:* CLARENCE E. KULDELL appointed production and material control engineer. JOHN R. MILLER appointed tools and methods engineer. *Greensboro, N.C.:* M. D. HUTCHINS appointed foreman.

Southern Pacific.—The Motive Power Department is now designated the Mechanical Department and titles of officers affected have been changed to conform.

Western Maryland.—*Baltimore:* C. J. WOLFE appointed assistant vice-president operations—mechanical. Former position of superintendent motive power abolished. *Hagerstown, Md.:* GEORGE M. BEISCHER, assistant superintendent motive power, appointed chief mechanical officer.

New Oakite Liqui-Det sends car interior cleaning costs spiraling ...DOWN ...DOWN ...DOWN

... gives you the important advantage ...

low-cost end results

Floor to ceiling – that's where new Oakite Liqui-Det works to chase dirt from car interiors. This single, sudsing detergent renovates head and side linings, upholstery, trim, floors, and carpets alike ... frees the whole interior from clinging grime, and does it gently, safely, thoroughly.

Packaged in concentrated liquid form, Liqui-Det works at low concentrations for maximum economy. It forms a sudsy solution instantly. No need to stir, no waiting, no heating necessary. Works especially well in hard water.

While kind to fabrics, metals, wood, plastic, paint—even hands—it's geared for tough work, too. Used as a pre-spray on trucks, Liqui-Det requires no brushing, removes soil immediately, thoroughly.

Ask the local Oakite man to demonstrate. Or, send for details. Oakite Products, Inc., 46 Rector Street, New York 6, N. Y.

SPECIALIZED INDUSTRIAL CLEANING
OAKITE
MATERIALS · METHODS · SERVICE
SCIENCE
In our 50th year

RAILROAD DIVISION

Cut cleaning costs? Solution is "modernize" not "eliminate"

"With maintenance pinched by cost-cutting programs, it could become quite a problem to keep up proper cleaning," says Sterling Killebrew, manager of the Railroad Division of Oakite Products, Inc.

"Reducing cleaning schedules is no answer. Cleaning is necessary from both an 'in-service' and a public relations viewpoint."

A better answer lies in more *effective* cleaning materials and in more *mechanization* of cleaning procedures, Mr. Killebrew said.

"Modern methods can improve car and locomotive appearance and keep up maintenance cleaning *without* adding manhours, and at *substantially lower costs*." Mr. Killebrew cited several case histories.

Saves $2600 monthly, in car-washing costs

"One road switched from a so-called 'economy' product to an Oakite material in its automatic car washer. The Oakite cleaner loosened road dirt more thoroughly, eliminating costly hand-finishing. Yet, it worked at more dilute concentrations . . . actually *cost $2600 less* for one month's supply.

Mechanization cuts tank car cleaning by $1600

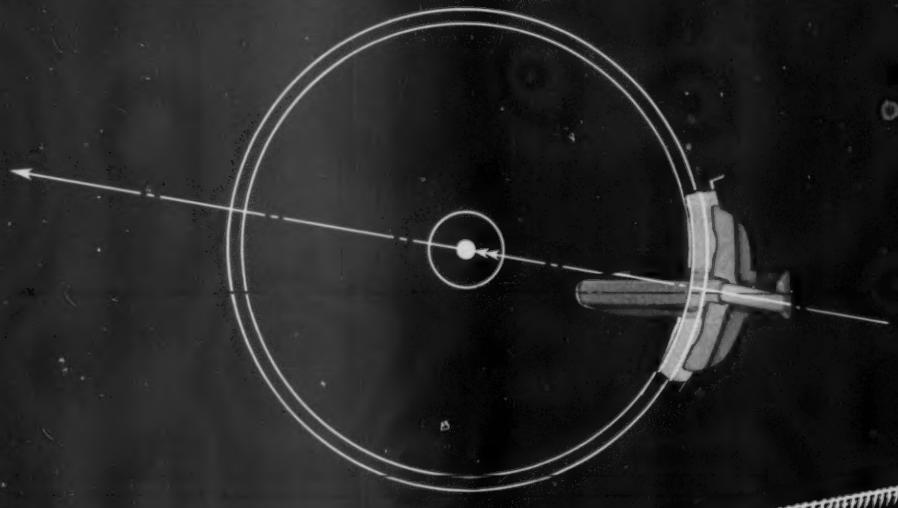
Another line, he said, cleaned 135 tank cars manually for $5200. By mechanizing the job, the same number was cleaned faster, more effectively, and with one-third the material consumption. Cost: $3600.

Quality Cleaner pays off at $800 a month

In a "cost-saving" move, a third road was using an "inexpensive" material for washing diesel exteriors. Cleaning one engine required 20 gallons of high-concentrate cleaning solution. Costing just pennies more per pound, an Oakite material gave them the same cleaning with only 5.6 gallons of low-concentrate solution. Net result: savings of $800 a month using the more "expensive" cleaner.

"Examples like these are common," Mr. Killebrew concluded. "Ask any Oakite man to tell you more."

NOW A.A.R.



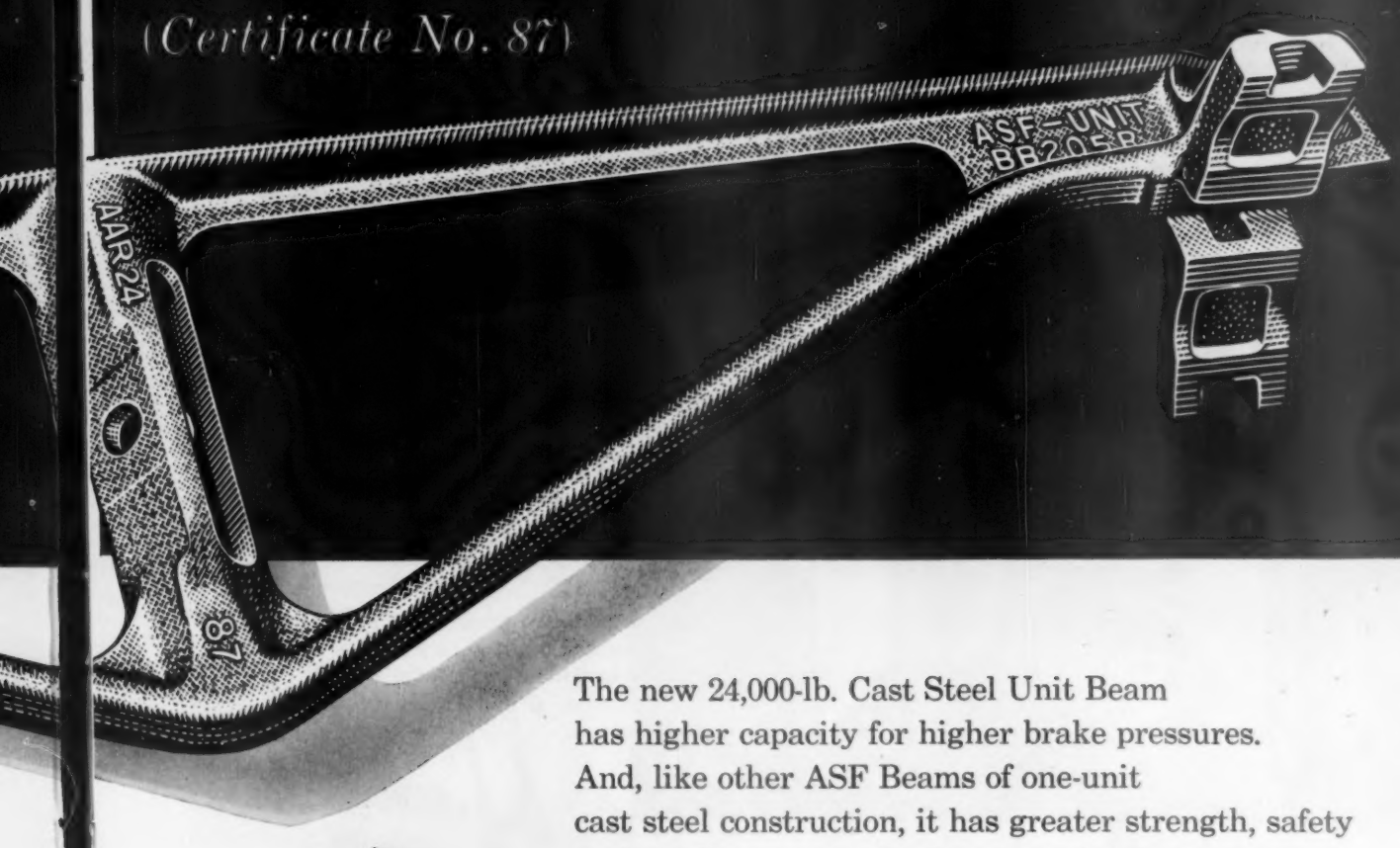
Cut your costs per car mile...with

ASF CAST STEEL UNIT BEAMS

STANDARD...

No. 1 cast steel unit beam

(Certificate No. 87)



The new 24,000-lb. Cast Steel Unit Beam
has higher capacity for higher brake pressures.
And, like other ASF Beams of one-unit
cast steel construction, it has greater strength, safety
and rigidity . . . costs far less to maintain.

ASF

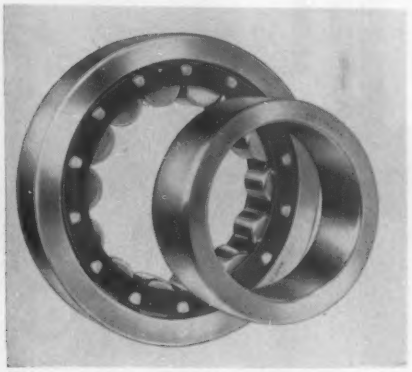
LEADER IN PROCESS

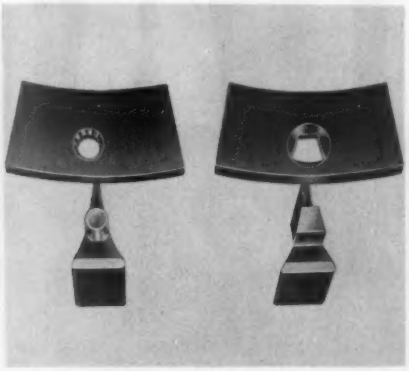
AMERICAN STEEL FOUNDRIES

Prudential Plaza, Chicago 1, Illinois

Canadian Sales: International Equipment Co., Ltd., Montreal 1, Quebec
Other Foreign Sales: American Steel Foundries, International, S. A., Chicago.

LOCOMOTIVES AND CARS WHAT'S NEW IN EQUIPMENT



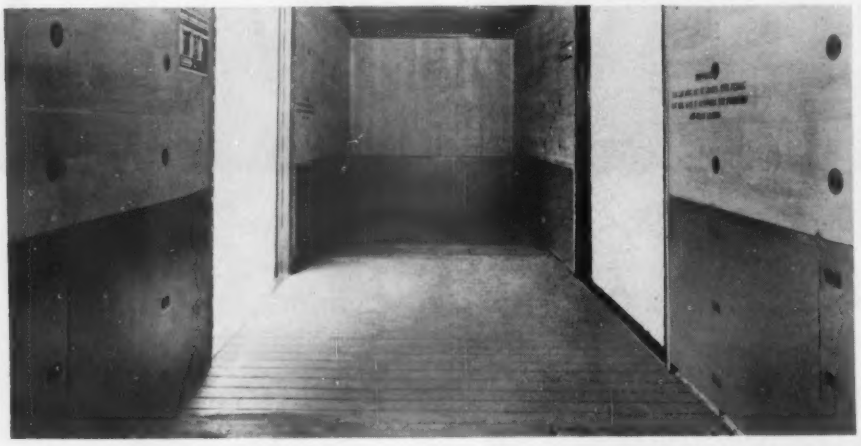


Traction Motor Armature Bearing

An improved pinion end bearing for traction motor armature shafts on diesel locomotives is currently being installed on new EMD locomotives, and is now available for all service and replacement requirements. The roller riding steel cage bearing introduced four years ago for this application has been improved with a new cage construction.

The cage bar shank, shown in one of the illustrations above, has been changed from a cylindrical (right) to a trapezoidal shape (left) to increase the cross-sectional area of the shank by 60 per cent. Holes in the cage end ring are made to conform with the shape of the shank and are adequately countersunk. This cage bar shank is self-locking, and strengthens the cage and the joint between the bars and the end rings. The bars are positioned more accurately.

Laboratory testing indicates this cage offers three times the life of the earlier design. Field testing also established increased bearing life. *Hyatt Bearings Div., General Motors Corporation, Dept. RLC, Harrison, N. J.*



Steel Lining for Box Cars

This metal box car lining is made from 3/16-in. steel sheet and is said to reduce contamination and reduce maintenance costs. The lining sheets also serve as gussets which strengthen the car.

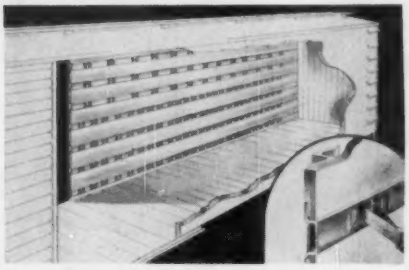
Lading band anchors in the lining over the side posts serve as spacers to place the surface of the steel sheet flush with the heavier wood lining used above. This makes the use of filler blocks unnecessary when applying this lining.

In the application shown, the sheets are 38 5/8-in. high and terminate 1 3/8-in. above the car floor. The material can be extended on up to the side and end plates of the car to eliminate the wood lining entirely, if desired. *Youngstown Steel Door Company, Dept. RLC, The Arcade, Cleveland 14.*

Grain Door Liner

Seal-Tite, a kraft paper grain door liner, is said to eliminate the need for grain door back-up reinforcing braces during grain shipment. The product is battened down over the grain door and fastened to the car floor and walls with paper lath.

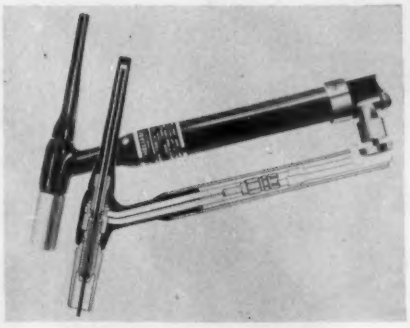
One roll of paper is sufficient backing for 20 grain doors. It can be applied on both doors of a car in 5 to 10 min. No caulking is required. The paper is packaged in twenty 7-ft by 8-ft sheets per roll. *J. J. Lipp Paper Company, Dept. RLC, 323 W. Polk st., Chicago 7.*



Strap Anchor Belt Rails

A permanent anchoring system for new or existing box cars, the Yocar "Safe Cargo," was designed to overcome objections by the railroads to excessive initial costs of installation. The "Safe Cargo" strap anchor belt rail can be installed during the relining process, replacing individual anchors. It may be possible through the use of these strap anchor belt rails to eliminate wood box car linings.

Tests conducted by Signode Steel Strapping Company of Chicago showed no evidence of failure in any form. This test was conducted following the installation of "Safe Cargo" in a standard box car owned by a major railroad. The test car carried 44,000 lb of coiled strapping. *Youngstown Steel Car Corporation, Dept. RLC, Niles, Ohio.*



Hand Welding Torch

A Heliarc hand-welding torch, the HW-18, has the cooling water passages molded in the torch head to give freedom from leakage. Lighter and smaller, the torch body is made

(*Continued on page 22*)

ELECTRIC-INCINERATING TOILET FOR RAILROAD USE

NO MORE CARE THAN AN ASHTRAY!

The cigar and cigarette are real, but the ASH in the picture is from the ashpan of an INCINOLET—after two days of use.

INCINOLET is a waterless electric-incinerating toilet. INCINOLET works as a complete disposal plant, reducing all human waste to odorless, inorganic ASH – bacteria free.

INCINOLET eliminates waste disposal problems with scientific sanitation by electric incineration. It is the first sanitary toilet designed specifically to rid railroads of maintenance demands common to the chemical storage bucket and water closet. INCINOLET is perfectly adaptable for use on diesels, cabooses and work cars, and is easily and quickly installed by regular railroad maintenance men.

For complete details write Dr. E. Bayne Blankenship, president or . . . railroad representative: Ajax-Consolidated Company

INCINOLET – waterless toilet

RESEARCH PRODUCTS MANUFACTURING COMPANY P.O. BOX 35164 • DALLAS 35, TEXAS

The General Purpose Locomotives shown above are two of the twenty GP's acquired in Seaboard's program thus far. The plan calls for additional FT freight locomotives, like the one on the left, to be turned in for similar GP units.

New locomotives for old . . .

The Seaboard *plans* its program of power renewal. This plan is based on turning in 16-year-old FT freight units on the purchase of new General Purpose locomotives containing certain manufactured components.

Thus, higher unit horsepower and greater versatility of the new GP's are achieved with much lower capital investment because of the turn-in value of the old locomotive.

How this or a similar plan might benefit your road's future can be had in detail from your Electro-Motive representative.

GENERAL MOTORS LOCOMOTIVES

ELECTRO-MOTIVE DIVISION
GENERAL MOTORS

LA GRANGE, ILLINOIS • *HOME OF THE DIESEL LOCOMOTIVE*

In Canada: General Motors Diesel Limited, London, Ontario

WHAT'S NEW IN EQUIPMENT—*Continued from page 18*

of heat-resistant Fiberglas reinforced phenolic. Gas cups for the torch have improved thermal shock and heat resistance, with impact strength four times greater than usual ceramic cups. For exceptionally hard use, metal sleeved cups are available.

The torch weighs 7 ounces. Design of collet bodies improves argon shielding, thereby conserving gas. An optional shut-off valve on the handle also conserves gas. *Linde Company, Division of Union Carbide Corporation, Dept. RLC, 30 E. 42nd st., New York 17.*

Pipe Vise

This ⅛- to 4½-in. capacity No. 25 vise has five jaws. Five jaws (instead of the conventional three) are said to give positive grip, regardless of pipe or conduit size, up to 4 in. This vise has a powerfully built frame, with large Acme screw threads which should result in longer service. *Toledo Pipe Threading Machine Company, Dep. RLC, 1445 Summit st., Toledo 4, Ohio.*

Diesel Lubricating Oil

A railroad diesel engine lubricating oil, Sunvis HD 340, is designed for the higher horsepower locomotive engines that are coming into use. At the same time, its use in the older locomotives is said to give savings in engine maintenance and lubricating oil costs.

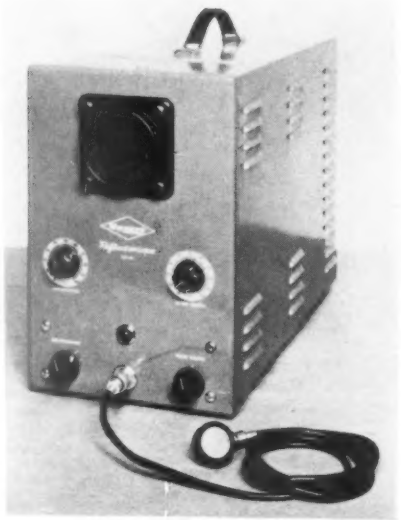
Laboratory and road tests in which it was compared with accepted oils were reported to show that HD 340 gives (1) good oxidation stability, (2) alkaline reserve for protection against corrosion by fuel sulfur, (3) low additive depletion, (4) bearing corrosion and wear resistance, and (5) low lubricating oil consumption.

In laboratory tests, Sunvis HD 340 not only oxidized less and was less corrosive to bearings, but its viscosity increased very little throughout the entire test period. Sunvis HD 340 was tested for 80,000 miles in freight service. The viscosity remained essentially constant, and the lead content remained consistently below 50 parts per million. A positive alkaline reserve was maintained throughout the road test and additive was not depleted. Insolubles stayed below 0.2 per cent.

The engine was inspected at the end of the test and it was found that pistons were clean, except for a highly polished coat of light tan lacquer. Groove filling was less than 40 per cent by volume, and there were no deposits under the crown. The air ports were less than 10 per cent restricted, and there was no sign of liner scuffing or ring sticking. *Industrial* Products Dept., *Sun Oil Company, Dept. RLC, 1608 Walnut st., Philadelphia 2.*

Aluminum Conductor Busway

The Type DE, a 225- to 1,000-amp plug-in Flex-A-Power busway with aluminum conductors is available both in three- and four-pole construction for three-wire, three-phase, or four-wire, three-phase applications. Type DE is designed for indoor use as a plug-in or feeder system in industrial plants and commercial buildings. It has a 50,000-amp RMS asymmetrical short circuit bracing as standard. *General Electric Company, Dept. RLC, Plainville, Conn.*



Portable Reflectoscope

The portable Type US reflectoscope operates at 2.25 megacycles and weighs 35 lb. It is approximately 9 in. wide by 19 in. deep by 14 in. high.

Field use is facilitated by simplification of controls to four knobs and the incorporation of high performance, bright picture easily read video trace. A single transistorized automatic alarm is readily attached. *Sperry Products, Inc., Dept. RLC, Danbury, Conn.*

Fiberglas Thermal Insulation

This Fiberglas product, known as AT-400 series transportation insulation, is designed for railway cars. The product is said to be highly resistant to slumping under conditions of repeated wetting, freezing, thawing or drying out; its resilience permits ease of handling; it can be snapped into place without need of support until the enclosing panels are installed; and the material completely fills the area to be insulated. *Owens-Corning Fiberglas Corporation, Dept. RLC, Toledo 1, Ohio.*

Worm Gear Jacks

The 1800 Series worm gear jacks are available in capacities of 2, 5, 10, 15, 20, 25, 50 and 100 tons. Worm gear jacks will hold heavy loads in position without creep. All eight models have a uniform rate of raise which permits jacks of varying capacities to be operated in unison on unevenly distributed loads. Raises up to 24 in. can be furnished. *Duff-Norton Company, Dept. RLC, P.O. Box 1889, Pittsburgh 30.*

Welding Wire

The Inco-Weld A wire brings to the inert-gas welding field the advantages for welding dissimilar metals which the Inco-Rod A electrode has made available for metal-arc welding. Inco-Rod A electrode, for metal-arc welding, will now be called Inco-Weld A electrode; the new inert-gas welding product will be called Inco-Weld A wire.

The wire has been designed to produce strong ductile joints in a large number of dissimilar metal combinations. Other features are its operability in all positions, a high-strength and corrosion-resistant deposit, machinability, high impact resistance for sub-

(*Continued on page 60*)

ENGINEER'S FIELD REPORT

PRODUCT CHEVRON FILTER COAT
FIRM FARR COMPANY
Los Angeles, Calif.

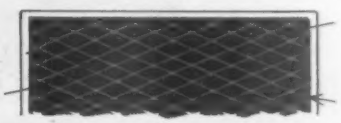
Air filter firm uses Chevron coating exclusively

Farr Co. supplies impingement-type air filters, oiled with Chevron Filter Coat, to nearly all major railroads. A leader in air filtering, Farr has used Chevron Filter Coat (formerly Calol) exclusively for three years, since product was introduced.

Farr's Director of Research, S.F. Duncan, recommends gel-structure oils like Chevron Filter Coat because they improve filter efficiency. Other users report Chevron Filter Coat increases filtering efficiency as much as 50% over oils they previously used.

A heated centrifugal oiler of their own design (above) applies Chevron Filter Coat to all Far-Air filters just before they are packed for shipment. Filters are immersed in heated oil for 30 seconds, then raised and spun at 300 rpm for a minute to remove excess oil.

Why Chevron Filter Coat ups efficiency of air filters



- High wicking ability—quickly soaks dust particles
- Will not drip off screens—gives full filtering efficiency through entire service period
- Easily applied and cleaned—but will not wash off in service
- Does not separate, harden, or change properties in service
- Non-corrosive to metals

CHEVRON Industrial Lubricants

For More Information about this or other petroleum products, or the name of your nearest distributor, write or call any of the companies listed below.

TRADEMARK "CHEVRON" AND "CHEVRON" DESIGN REG. U.S. PAT. OFF.

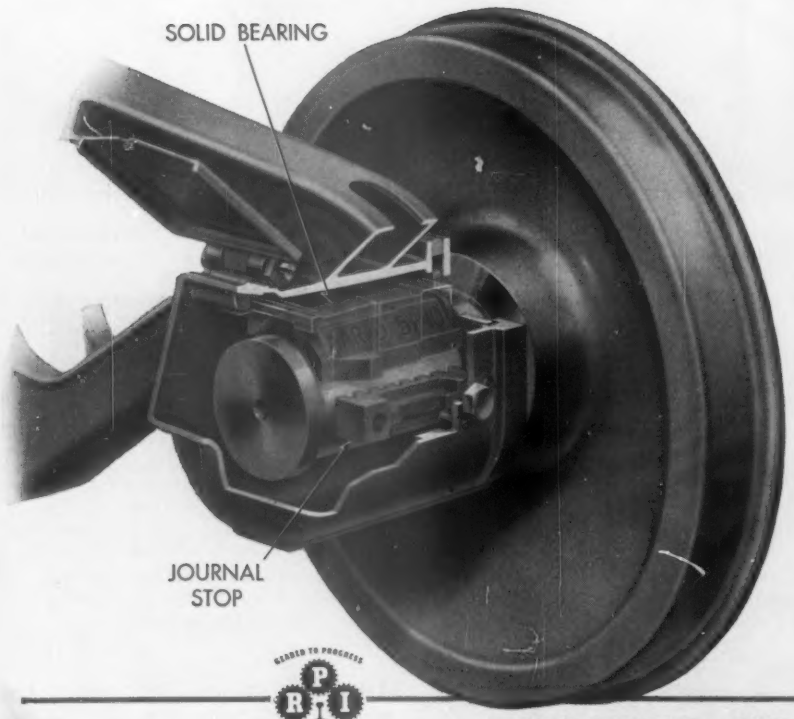
STANDARD OIL COMPANY OF CALIFORNIA, San Francisco 20
THE CALIFORNIA OIL COMPANY, Perth Amboy, New Jersey
STANDARD OIL COMPANY OF TEXAS, El Paso
THE CALIFORNIA COMPANY, Denver 1, Colorado

HOW SOLID BEARINGS AND JOURNAL STOPS HELP KEEP

It's a fact...

that MAGNUS R-S JOURNAL STOPS can cut hot boxes 90%— save 43% on total bearing operating costs

Overall experience proves that Journal Stops performance you want—



AAR SOLID BEARINGS

Simple
Dependable
Economical
Safe

R-S JOURNAL STOPS

Permanent installation
Better bearing performance
Lower maintenance costs

GEARED TO PROGRESS
RPI MEMBER

MAGNUS METAL CORPORATION

RAILROADS OUT OF THE RED

This is how much you can save every year with Magnus R-S Journal Stops—almost $35 on every car so equipped!

can give you the kind of bearing and pay for themselves in less than 3 years

R-S Journal Stops stabilize the entire journal bearing assembly. That eliminates 90% of the hot boxes — probably even more. You cut down the service attention required. Conservatively you double bearing and dust guard life. You reduce wheel flange wear and get more miles per axle too.

Right now you save almost $35.00 per car annually — pay the complete cost of the Stops, including installation, in less than three years. And bigger savings are sure to come. That's because R-S Journal Stops will help make possible a further extension of intervals between repacks. (Without Journal Stops the maximum extension won't be practicable). They'll make it easier to provide an effective rear seal, save on oil, still more on servicing.

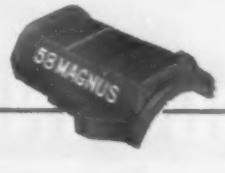
Yes, R-S Journal Stops are the low-cost answer to hot boxes. And with them you still have all the many advantages that solid bearings bring to railroad rolling stock. You can take the maximum load, make the fastest schedule. Lading gets the smoothest ride. You save excess dead weight and get the lowest possible running resistance in pounds per ton. Best of all, with Journal Stops solid bearings can give the kind of performance you want at a price you can afford to pay.

Write us for *all* the facts . . . Magnus Metal Corporation, 111 Broadway, New York 6; or 80 East Jackson Boulevard, Chicago 4, Illinois.

MAGNUS

Solid Bearings

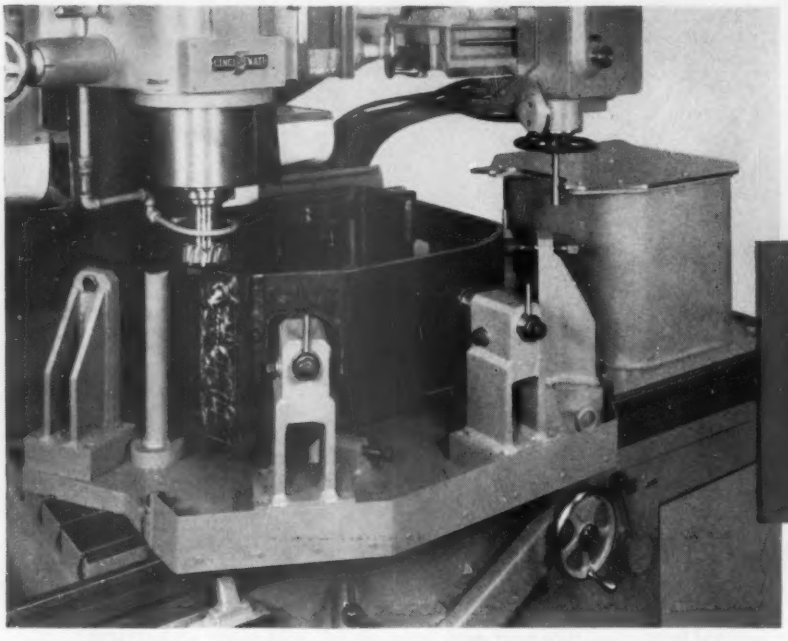
RIGHT FOR RAILROADS
. . . in performance . . . in cost



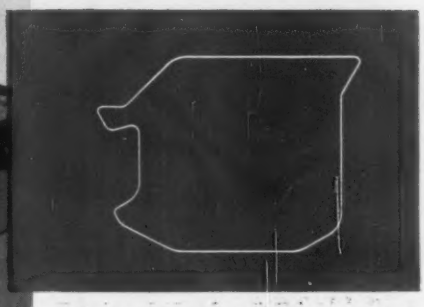
Subsidiary of **NATIONAL LEAD COMPANY**

25" x 33" Profile

Milled Automatically on CINCINNATI 28" VERTICAL HYDRO-TEL



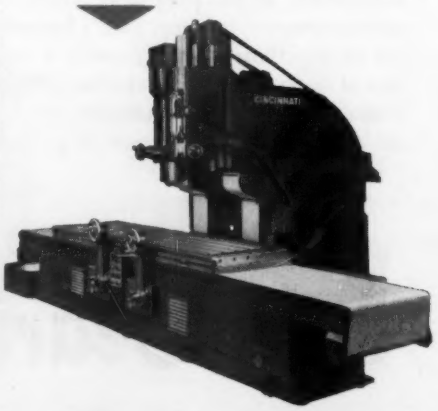
Entire profile edge of large weldment is automatically milled in one continuous cut, on this CINCINNATI 28" Vertical Hydro-Tel Milling Machine, equipped for 360° Automatic Profile Milling. Note how machine handwheels can be swiveled out of the way to accommodate overhang of large fixtures.



Variety of curves in the above template is scanned automatically by the tracing finger extending from the Hydro-Tel's 360° Automatic Profile unit.

There are two ways to mill large two-dimensional profiles. The hard way, when the operator uses two hands to control table and cross traverse, while keeping his eyes glued on the work and cutter. Or the easy low-cost way, automatic profile milling on a CINCINNATI 28" Vertical Hydro-Tel like the one illustrated here. This equipment greatly simplifies the operator's job. After he loads the fixture the automatic profiling unit takes charge of the operation, scanning the curvature of the template while automatically controlling the table and cross feed to mill the exact profile of the template. ¶ This production idea can be extended to profile mill two, three or four parts at one time, with the corresponding two-, three- or four-spindle head. There's no floor under costs when you plan your milling operations on a CINCINNATI Hydro-Tel. Cincinnati builds four machines of this type: 16", 28", 30", 36". All are "spec'd" in Sweet's Machine Tool File. Complete data for the 28" size may be obtained by writing for catalog No. M-1773-3.

CINCINNATI 28" Vertical Hydro-Tel Milling Machine. General-purpose style illustrated. Can be equipped for die sinking and/or automatic profile milling, or multiple spindle production milling. Catalog No. M-1773-3.



THE CINCINNATI MILLING MACHINE CO.
CINCINNATI 9, OHIO

CINCINNATI®

MILLING MACHINES • BROACHING MACHINES • CUTTER AND TOOL GRINDERS • SPECIAL MACHINE TOOLS • METAL FORMING MACHINES HARDENING MACHINES • CUTTING FLUIDS • GRINDING WHEELS

Fifty-foot, 50-ton mechanical refrigerator car leaves PFE Los Angeles shop.

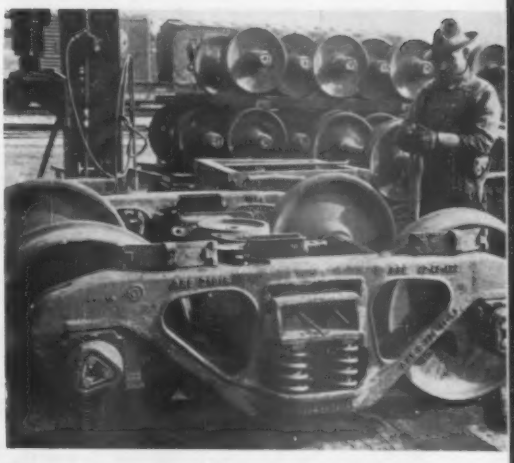
PFE Expands Mechanical Reefer Fleet

Over $20,000,000 will be spent for 1,000 "all purpose" cars this year and next

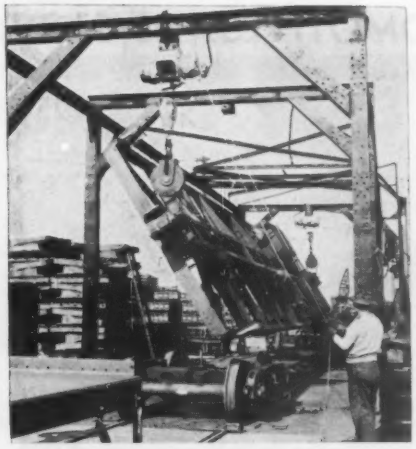
CONSTRUCTION is under way on 1,000 all-purpose mechanical refrigerator cars which Pacific Fruit Express (jointly owned by the Southern Pacific and the Union Pacific) ordered from its own shop in Los Angeles, at a cost of more than $20 million. The cars have cooling equipment and humidity controls for hauling not only frozen foods but fresh fruit and vegetables to the east. Large sliding doors and metal floor racks permit easy mechanical loading of merchandise for the return trip to the west coast, assuring maximum car utilization.

The first 500 cars will be "super-giant" 50-ft, 50-ton cars, and the second 500 will be 40-ft, 40-ton cars. The first sample 50-ft car was exhibited to a group of railway officers, supply men and refrigerator car line representatives on February 16. Cars then started rolling off the assembly line at the rate of two each day. Production has been increased progressively and cars are being released currently at the rate of four daily, with a working force of about 200 men.

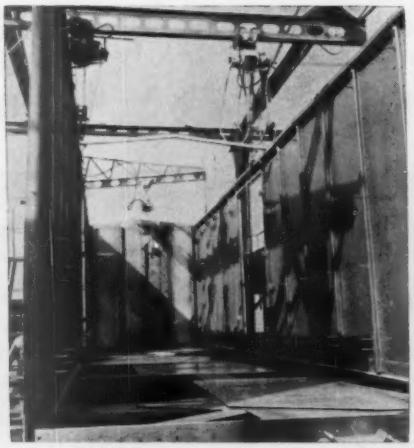
The last 50-ft cars are expected to be turned out of the shop by the end of August and will be followed by the 40-ft cars, scheduled for completion by



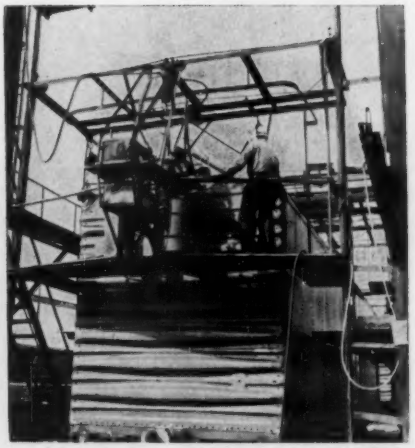
PFE carman assembles ASF truck. Buckeye CR's, National Malleable C-1's and Standard Car Truck Barbers are also used. All cars have Griffin cast steel wheels and Hyatt or Timken roller bearings.



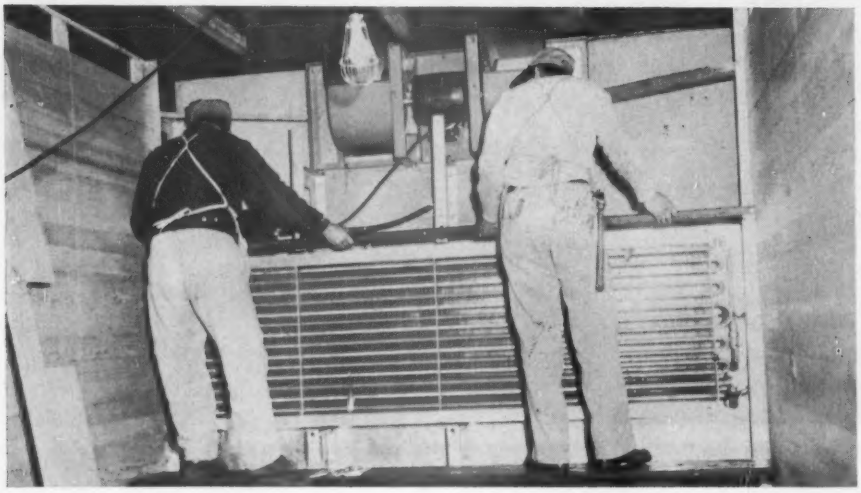
Welded underframes were supplied assembled. In inverted position PFE applies the underbody equipment including the two 250 gal fuel tanks, fuel strainers, air brake equipment, draft gears, couplers.



Car sides came from Youngstown Steel Door Co. ready for application to the underframes. The sliding side doors come from Camel Sales Co. and Superior Car Door Co.



Elevator-mounted rivet heater and platform can be positioned for working on the Standard Railway Equipment car ends. The Standard roofs are applied and car is ready for insulation and lining.

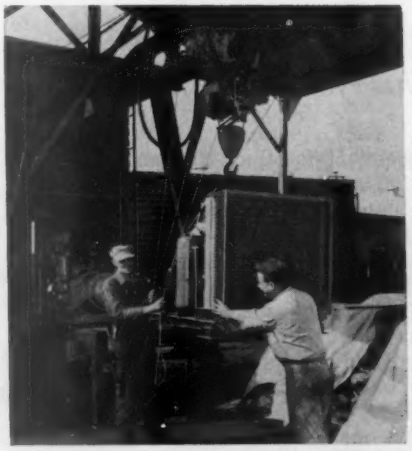


With insulation in place, the evaporator and blower assembly is installed in the vertical flue at the end of the car. Carrier Corp. refrigeration equipment is being used in all the 50-ft cars. Wood strips on the ceiling will be used for application of aluminum sheets which form overhead ducts.

Details of PFE Mechanical Refrigerator Cars

	50-ft cars	40-ft cars
Nominal capacity, lb	95,500	80,000
Light weight, lb	73,500	62,800
Loading capacity, cu ft	3,026	2,332
Inside length, ft-in.	44-6	35-4
Inside width, ft-in.	8-6	8-3
Height, floor rack to ceiling, ft	8	8
Width, side door openings, ft	6	6
Height, side door openings, ft	8	8
Insulation thicknesses, in.:		
Side walls	7	7
A (evaporator) end wall	8	8
B end wall	7	6
Roof	10.5	8
Floor	7	6

Diffusers in the aluminum ceiling feed air over the cargo. It then returns to the evaporator under the floor racks, which were supplied by Union Asbestos & Rubber Co. PFE installs lading strap anchors in side lining.



Carrier refrigeration equipment on the 500, 50-ft cars is powered from General Motors 34-hp diesel at the engine compartment door. Cars to be built later will have smaller Witte engine and lower capacity refrigeration system.

February 1959. After all these cars are placed in service, PFE will have a mechanical refrigerator car fleet of 1,714 cars. Its total ownership will be over 34,000 cars.

All 1,000 of the new cars will have all-welded steel underframes, riveted superstructures, and modern freight car trucks equipped with roller bearings and cast steel wheels. The 50-ft cars have 7 in. of insulation in the walls and floor, and 10½ in. in the ceiling, compared with 6 in. in the walls and floor for the smaller cars and 8 in. in the ceiling. They are equipped with floor racks having metal slats and wood stringers, while the 40-ft cars will have hardwood slats on aluminum stringers. Sliding 6-ft side doors permit pallet loading with conventional lift trucks.

Versatile Refrigeration

Versatility of refrigeration units which allows hauling either frozen or medium-temperature perishable products in the

(*Continued on page 46*)

Shaffers Crossing car shop makes running and heavy repairs on about 150 cars per day. The automatic nailer is used when required, and labor savings amount to 16 man-hours per day.

Norfolk & Western Uses Automatic Nailers

ALTHOUGH MOST FLOOR and lining repairs to box cars at Shaffers Crossing shop of the Norfolk & Western call for patching, occasionally a car has to be relined or refloored completely. For the past two years, the N&W has been using a Powasert air-operated automatic nailer to do most of the nailing at this repair shop in Roanoke, Va.

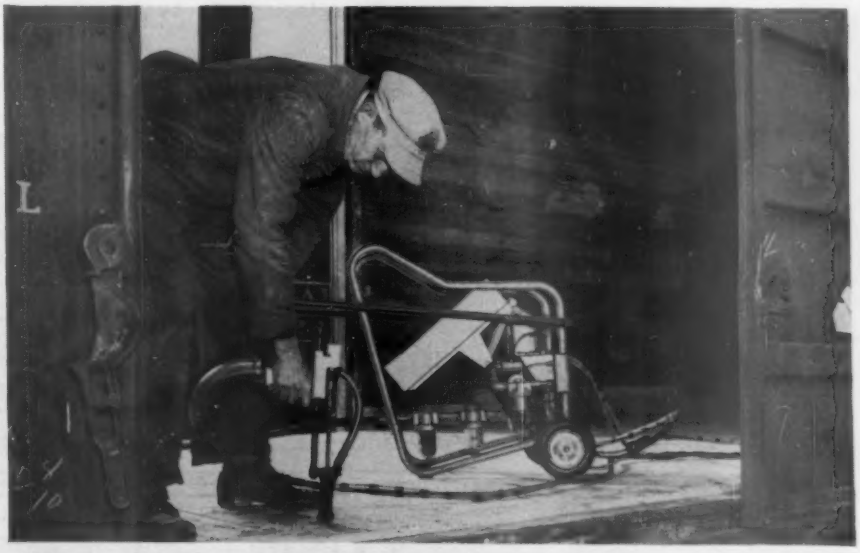
It has been a man-hour and money saver. Before the railroad began using this nailer, the entire job was done manually with hammers and hatchets. After the machine was installed, a greater portion of the nailing has been done automatically, with an attractive saving in man-hours and costs.

Using the Powasert for complete relining and subfloor jobs, one operator can nail 3.5 box cars in one 8-hr shift. Manual methods allowed one man to turn out only one car. For this complete re-flooring and re-lining, two men tear out the old material, and the new pre-cut plywood panels and lining boards are tacked in position. For floors, the N&W runs the new boards longitudinally in the car ends, and across the car in the doorway area. All this flooring is ⅞ x 5-in. material. Sides are covered with ⅝-in. plywood, and end lining boards are $1\frac{3}{16}$-in. x $5\frac{3}{4}$-in.

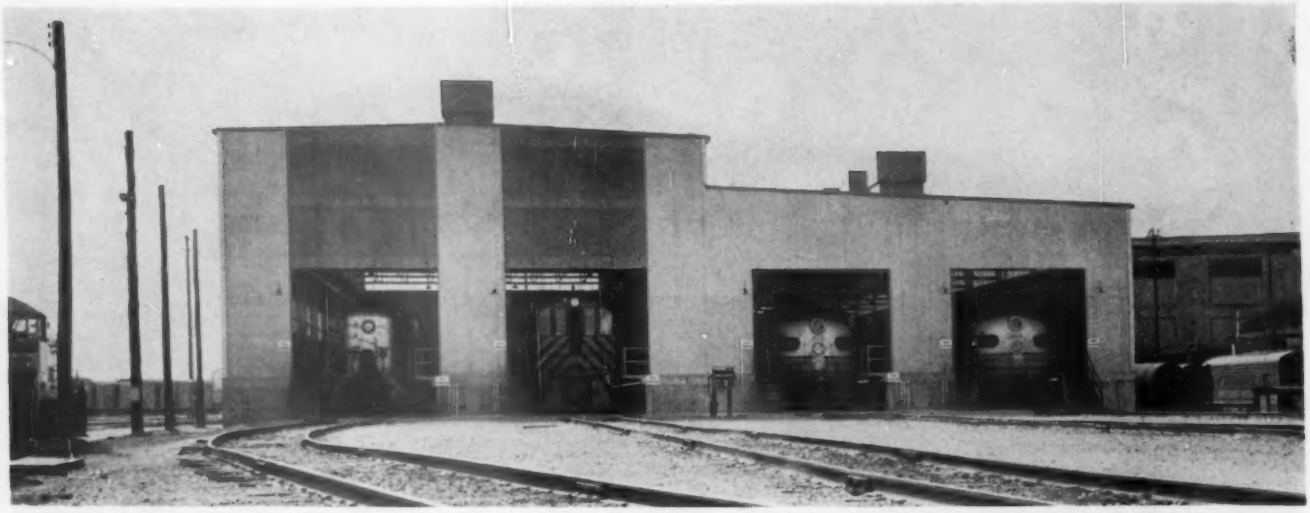
With all of the new material tacked in place, the nailer is used to drive approximately 1200 8-penny nails in the floor and walls of each car. Approximately 500 nails are driven in the floor. This Powasert nailer is made by the United Shoe Machinery Co.

A railroad spokesman stated that working with the Powasert is less tiring than the using of a hammer and working in uncomfortable positions. The manual methods meant that men inevitably became tired and slowed down as the day went on. Along with steady production, it was stated that an all-around better nail job is produced with Powasert. Nails are driven hard and true, with no heads sticking up. Because this nailer and its feeder-separator can be moved easily, it is used for most jobs which require the driving of nails. These include work car and caboose repairs, along with box car upgrading.

Based on the satisfactory performance at Shaffers Crossing, the N&W has purchased two additional nailers for use at other line shops.



Most cars needing replacement of a section of floor or lining have nails driven automatically when practicable. The operator makes his rounds behind repair gangs, driving nails after the boards are placed.



Two-level shop has depressed floors, pits and overhead cranes.

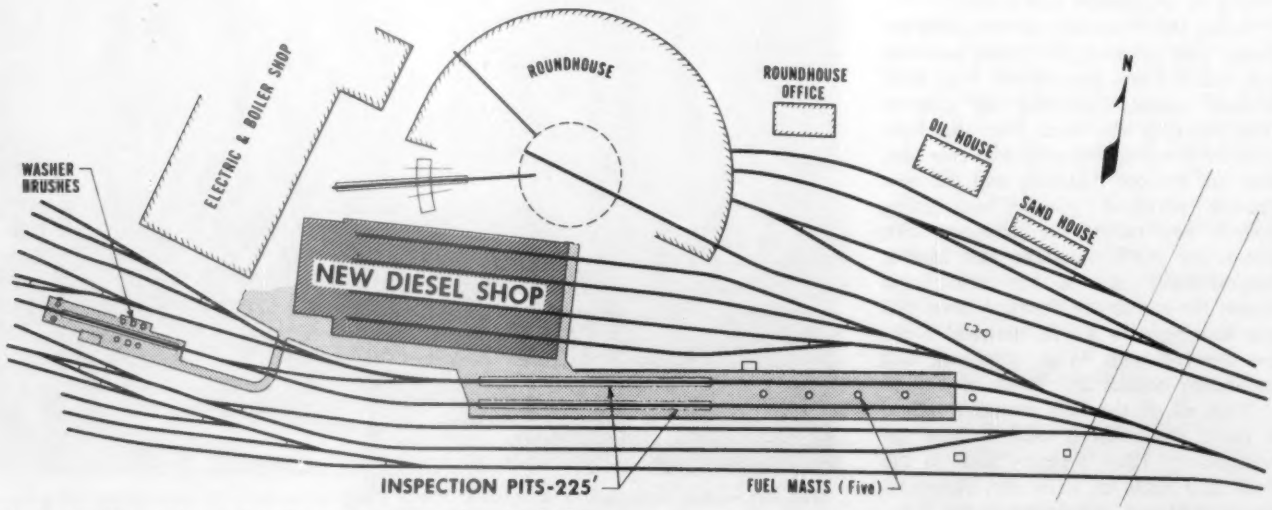
SP Terminal Speeds Diesel Servicing

THE SOUTHERN PACIFIC'S diesel light repair shop at Hardy Street Yard in Houston is the culmination of planning begun in 1953. After four years and at a cost of over $600,000, this complete modern plant includes washing, inspection, sanding and fueling facilities arranged on a through service basis.

The fire-resistant shop building, where light running repairs up to and including annual inspections are performed, is large enough to handle 16 units at a time. Built of steel and concrete, it measures 110 by 260 ft and is divided into two sections, each having two 200-ft service tracks. Four diesels can be handled simultaneously on each track. The shop has the conventional two-level concrete service platforms with depressed pits. The building also includes a shop area, room for filter cleaning and parts storage, and an air conditioned office with fluorescent lighting and acoustical ceilings at platform level. At ground level, the basement under this area furnishes additional storage space. The south section of shop is equipped with a 5-ton overhead crane. Each service platform is piped for treated water, and "dry" air is used for electrical equipment. Crank cases can be filled or drained anywhere along the four service tracks.

Twenty-two Hartzell automatic airjet exhaust ventilators keep the air pure in the shop, removing exhaust gases at a rate of 932,000 cfm. A complete change of air is made every 49 sec. Air enters the shop through louvers below the service platforms and is exhausted through the roof to provide complete coverage. There are nine Ventura-fin space heaters installed for winter. Daylight is provided by continuous bands of Corrulux translucent plastic in the transite sidewalls. Artificial light is obtained from a combination of incandescent, mercury vapor and fluorescent lights. Fire protection is provided by a high pressure fog pump, carbon dioxide and chemical fire extinguishers.

Automatic washing of diesel equipment is done on a 149-ft washing track, where the locomotives get high pressure applications of chemical cleaning solution and a clear water rinse. Whiting Corporation motor-driven rotary brushes



Southern Pacific combines modern shop with well-planned service facilities.

High-intensity lighting facilitates night servicing and inspection.

Sand, water and lube oil outlets at each fuel mast.

remove the grime and dirt. Locomotives leaving the washer can go to either of two 225-ft-long concrete inspection pits, and then directly to sanding and fueling operations which are done simultaneously on either of two 200-ft tracks. The SP dries sand by using a shop made rotary sand dryer fired with natural gas. Five fuel masts are provided, each column composed of a 3-in. supply pipe reduced to 2-in. with a control valve 3 ft from ground level, 2-in. by 10-ft diesel fuel hose, 2-in. return bend and a 2-in. by 11-ft fuel hose fitted with Poage No. 500 coupling. This equipment is supported by a ¼-in. cable fastened to return bend through a pulley in a 6-in. WI pipe to a lead weight which supports the weight of hose. Ice storage capacity of 1,200 lb is provided at east end of servicing tracks. After servicing, the locomotives are placed on one of two ready tracks for dispatching.

The shop operates 365 days per year, with some 224 men divided into three shifts handling inspection, servicing and repair of about 83 diesel units per day. All locomotives are assigned to a general pool. An average of 12 annual, 27 quarterly and 93 monthly inspections are made each month.

Five men are assigned to a monthly inspection, six for a quarterly and eight for an annual inspection. Annual work is done on either of the two tracks in bay equipped with the 5-ton crane. A check list is used for each inspection from daily through annual. Of the 83 units handled, all repairs up to and including annual inspections are classified as light repairs. This consists of usual routine running repairs and inspection. In addition, power assemblies are changed out for defects such as slick or broken rings, cracked pistons, high piston-to-head clearance, and worn bearings are replaced. Some accident repairs are done in the running repair shop.

Wheel and truck work is done in the general shop, usually on a unit exchange basis. Wheels are also turned in the general shop.

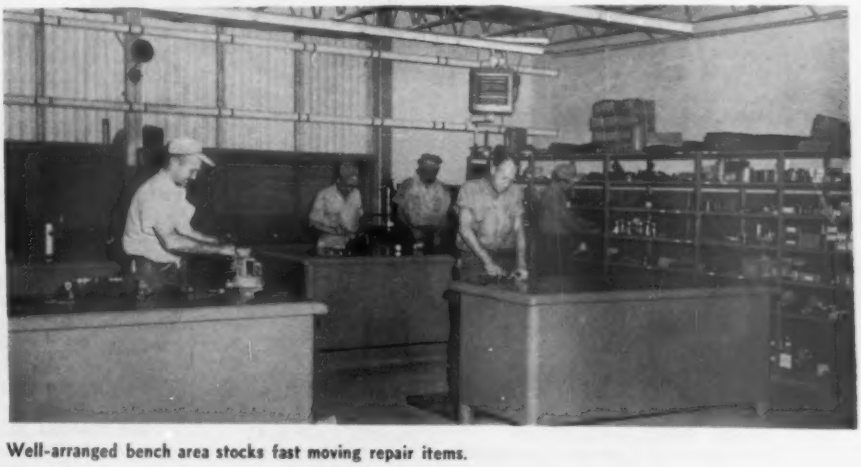
Other exchange units include, air compressors, turbo chargers, roots blowers, radiator cores, auxiliary generators, lubricating oil coolers, motor-generator sets, and engine governors.

The filter cleaning room is equipped with a Farr washer, a shop-made dryer, and a Paxton-Mitchell filter oiler for servicing impingement type filters. Lubricating oil is tested once every four days in the chemical laboratory, with changes controlled by analyses. A complete oil change is made at each annual inspection. A shop-made pump is used for flushing the lube oil system. The old oil is collected and reclaimed by an outside company.

Shop equipment includes Sweeney power wrenches, Thor impact wrenches and special EMD and Alco tools. Testing equipment includes an a-c dielectric tester, Kiene peak pressure indicators, Biddle Megger, EMD and Weston ammeters, voltmeter and milliammeter. Also available is a shop-made m-u control and dynamic brake cable tester equipped with an electric Megger and 40-amp load potential, and an EMD-mg set for transition setting.

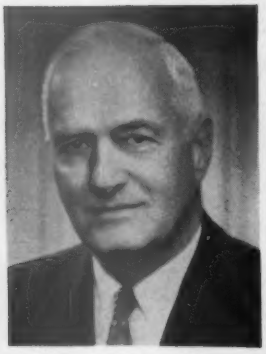
Material racks are provided for fast moving items. Special carts and pallets are used for handling material and supplies. All material used in regular routine service is delivered by the stores department in large quantities to keep handling costs at a minimum.

The entire plant is equipped with two-way loud speakers from the shop foreman's office. Extensive yard lighting facilities have been provided. Built under traffic, the project also required the retiring of a major portion of the old roundhouse, relocating nearly two miles of track, and re-laying of thousands of feet of fuel, water and power lines.



Well-arranged bench area stocks fast moving repair items.

R. G. May



R. L. Dearmont

H. C. Wyatt

K. H. Tuggle

Program for 1958 Annual Meetings

Mechanical Division and Electrical Section

Operations and Maintenance Department — — Association of American Railroads

Hotel Sherman, Chicago

TUESDAY, June 24, 1958

Joint Session—Ballroom, 10:00 a.m.

Address by R. L. Dearmont, President, Missouri Pacific
Address by R. G. May, Vice President, Operations and Maintenance Department

Mechanical Division—Ballroom, Hotel Sherman

TUESDAY, June 24, 1958

FIRST DAY (Convening after Joint Session)

Address by Chairman C. E. Pond
Business Meeting
Report of General Committee
Report on Mechanical Research
Discussion of Committee Reports on:
- Locomotives
- Lubricants and Fuel for Diesel Locomotives
- Axles
- Geared Hand Brakes
- Specifications for Materials
- Safety Appliances

WEDNESDAY, June 25, 1958

SECOND DAY (9:30 a.m.)

Address by H. C. Wyatt, Vice President and General Manager, Norfolk & Western
Address by W. M. Keller, Vice-President, Research Department, AAR
Discussion of Reports on:
- Arbitration
- Prices for Labor and Materials
- Car Construction
- Loading Rules
- Forest Products Loading
- Brakes and Brake Equipment
- Couplers and Draft Gears

THURSDAY, June 26, 1958

THIRD DAY (9:30 a.m.)

Address by Hon. Kenneth H. Tuggle, member, Interstate Commerce Commission
Discussion of Reports on:
- Wheels
- Tank Cars
- Journal Roller Bearings
- Lubrication of Cars and Locomotives

Electrical Section—Louis XVI Room, Hotel Sherman

MORNING SESSION (Convening after Joint Session)

Address by Chairman C. R. Bland
Business Meeting
Report of representative on Mechanical Division Locomotive Committee
Report of representative on Mechanical Division Passenger Car
Report of representative on Mechanical Division Passenger Car Specification Committee

AFTERNOON SESSION (2:00 p.m.)

Report of Committee 1—Car Electrical Equipment
Report of Committee 3—Air Conditioning and Refrigeration

MORNING SESSION (9:00 a.m.)

Report of Committee 3—Air Conditioning and Refrigeration (continued)
Report of Committee 4—Motors and Control
Report of Committee 5—Illumination
Report of Committee 6—Welding and Cutting
Report of Committee 7—Automotive Electric Rolling Stock

AFTERNOON SESSION (2:00 p.m.)

Report of Committee 8—Power Supply
Report of Committee 10—Wire, Cable and Insulating Materials
Report of Committee 11—Electric Heating
Report of Committee 12—Electric and Diesel-Electric Locomotive Facilities and Procedures

MORNING SESSION (9:00 a.m.)

Report of Representatives to the ASTM
Report of Representative to the ASA
Report of Committee 14—Safety
Report of Committee 15—Relations With Public Utilities
Report of Representative to the NESA
Report of Committee 17—Application of Radio and Communication Systems to Rolling Stock
Report of Committee 18—Wiring Diagrams for Rolling Stock

How Mechanical Division Is Organized

C. E. Pond
Chairman

F. Peronto
Exec. Vice-Chairman

STANDARDS AND PROCEDURES for which the AAR Mechanical Division is responsible make possible speedy, uninterrupted freight car interchange throughout most of North America. The mandatory, recommended, and suggested methods and arrangements developed by the 21 standing committees and 5 special committees of the division apply not only to freight cars, but also to passenger cars and locomotives. All of this is done under the jurisdiction of the General Committee now headed by C. E. Pond and composed of the 15 senior mechanical officers shown below.

These activities involve much administrative work which is handled by the staff of the Mechanical Division under Fred Peronto, executive vice-chairman, at the headquarters at 59 East Van Buren street, Chicago. Letter ballots, sur-

General Committee

C. E. Pond, Chairman — S. M. Houston, Vice Chairman

S. M. Houston
Gen. S.M.P.
SP

T. T. Blickle
Gen. Mgr., Mech. Dept.
AT&SF

L. R. Christy
Chief Mech. Officer
MP

R. E. Franklin
Asst. Vice-Pres.
Southern

L. E. Gingerich
Chief Mech. Officer
PRR

J. W. Hawthorne
Gen. S.M.P. and E.
ACL

J. H. Heron
Chief Mech. Officer
GN

W. F. Kascal
Asst. Vice-Pres.—Equip.
NYC

E. A. Kuhn
Chief Mech. Officer
C&O

D. S. Neuhart
Gen. Supt. M.P. and M.
UP

F. B. Rykoskey
Gen. Supt. M. P. and E.
B&O

J. A. Welsch
Gen. Sup. M.P.
IC

C. N. Wiggins
Chief Mech. Officer
L&N

E. Wynne
Chief of M.P. and C.E.
CNR

veys, and clarifications of Interchange Code rules are typical of the activities.

The office of the secretary edits, publishes and distributes all the division's committee-approved publications including the Code of Interchange Rules, Wheel and Axle Manual, Manual of Standard and Recommended Practice, Lubrication Manual, and loading rule pamphlets. The Mechanical Inspection Department, which works with the individual member roads, is also a part of the division staff.

A major project of the Arbitration Committee, assigned to a special working committee during the past two years, has been the simplification and condensation of the Interchange Rules. Already some revisions are in effect and some parts have been eliminated. The committee settles disputes submitted by subscribes to the AAR Interchange Agreement, and handles the routine revision of interchange rules.

The Committee on Prices for Labor and Materials semi-annually receives material prices from representative railroads and computes the charges in the price rules of the Interchange Code. It solicits and computes per-pound prices covering rebuilt cars and makes field studies covering necessary price change.

The Committee on Car Construction studies and investigates the design, construction and maintenance of freight cars and their components. It controls new freight car designs and handles approval tests of important parts.

The Committee on Brakes and Brake Equipment has jurisdiction in the design and maintenance of the various types of air brake equipment used on freight and passenger cars and locomotives. Air-brake instruction pamphlets distributed by the manufacturers are completely under brake committee control.

The Committee on Lubrication of Cars and Locomotives collaborates with the manufacturers in investigations and approval tests of roller-bearing greases and journal-lubricating devices. The arrangement, lubrication and maintenance of the AAR journal boxes are supervised by this group.

The Committee on Safety Appliances works as a liaison group between the railroad industry and the Interstate Commerce Commission which controls the application of devices under the Safety Appliance Act. The Committee on Tank Cars works closely with the Bureau of Explosives in tank car design.

The loading rule committees work with railroads, shipper groups and individual shippers. The other committees control the standards, approval and testing of the car and locomotive components covered by their titles.

Electrical Section Officers

Chairman
C. R. Bland, C&O

Vice Chairman
H. P. Wright, B&O

Secretary
Carl C. Elber

Mechanical Division Committee Chairmen

ARBITRATION
W. N. Messimer, MDT

SUB-ARBITRATION
C. J. Flanagan, NYC

PRICES
L. B. George, CPR

BRAKES
T. H. Bickerstaff, AT&SF

COUPLERS
I. N. Moseley, N&W

LOADING RULES
H. L. Hewing, CCIB

SAFETY APPLIANCES
W. O. Teufel, PRR

SPECIFICATIONS
L. S. Crane, Southern

TANK CARS
M. R. Buck, AT&SF

GEARED HAND BRAKES
H. B. Wolfe, AT&SF

AXLES
W. M. Keller, AAR

PASSENGER CARS
R. H. Graff, NYC

Mechanical Division Staff

Vice-Chairman
L. T. Donovan
Asst. Exec.

Secretary
F. H. Stremmel

SUB-PRICE
C. F. Davidson, StLSF

CAR CONSTRUCTION
J. A. Gower, PRR

FOREST PRODUCTS
N. A. Williams, UP

LOCOMOTIVES
F. H. Einwaechter, B&O

WHEELS
P. V. Garin, SP

LUBRICATION
A. J. Schulte, AT&SF

ROLLER BEARINGS
F. Fahland, UP

LUBRICANTS AND FUELS
R. W. Seniff, B&O

Mechanical Research Moves Ahead

Despite the effects of the recession on railroad business and with the AAR Board of Directors cutting assessments for member roads by 20 per cent, the Mechanical Division research program for 1958 will operate on about the same budget as last year. "To do otherwise would be false economy—research is a job that is never completed," W. Faricy, AAR board chairman and chief executive officer, told a railroad group recently.

During the past year the importance which the AAR places on its research activities was emphasized by the appointment of W. M. Keller as vice-president—research, a newly created position. More recently, G. H. Newcomer, who was formerly assistant mechanical engineer of the Pennsylvania, has been appointed director of mechanical research.

Mechanical research will hinge around two priority projects—investigations of axles, and studies of fuels and lubrication. Work on axles will include fatigue tests of roller bearing axles, especially those for the all-purpose freight car roller bearings. Production specimens of the new raised-wheel-seat freight-car axle will be checked. Investigations of axles overheated in service and fatigue tests of locomotive axles will continue. Much of this work will be done on the two fatigue machines recently installed at the Research Center in Chicago.

Research Center machines used for certification of roller-bearing grease, the testing of journal lubricators and oils, and the testing of bearings are scheduled for several months in advance. Three cartridge-type bearings are now undergoing road tests in interchange service following laboratory tests on the full-scale bearing journal machine. Equipment is now available to test roller bearings as required by new AAR specifications. The Laboratory continues investigating the condition of journal-box packing after 18 months of service. The two roller-bearing grease machines are scheduled throughout this year. Several greases have passed tests on these machines and are in the process of certification.

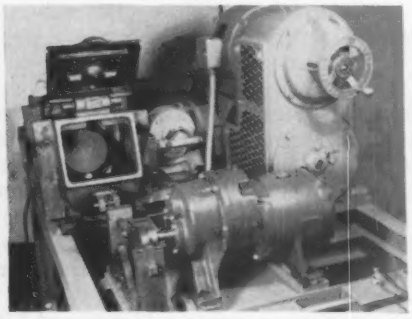
Analytical work is still going on in the chemical laboratory on grease characteristics. Electron microscope work shows that some of the present theories of grease penetration are inconsistent with bulk-penetration results and with the interpretations of conditions in full-scale roller bearings. Methods of evaluating the strength of grease fibers with various rates of shear are planned.

Road tests to determine methods for producing a better

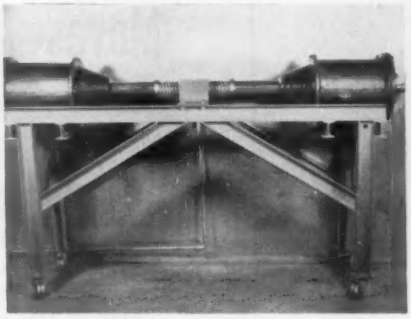
W. M. Keller

G. H. Newcomer

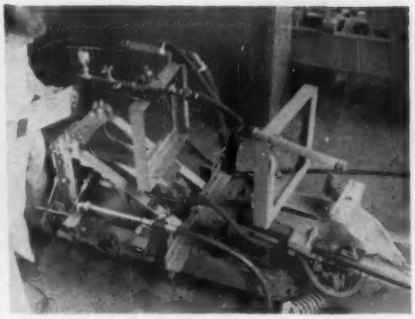
Projects Now Under Way at the AAR Mechanical Laboratory . . .



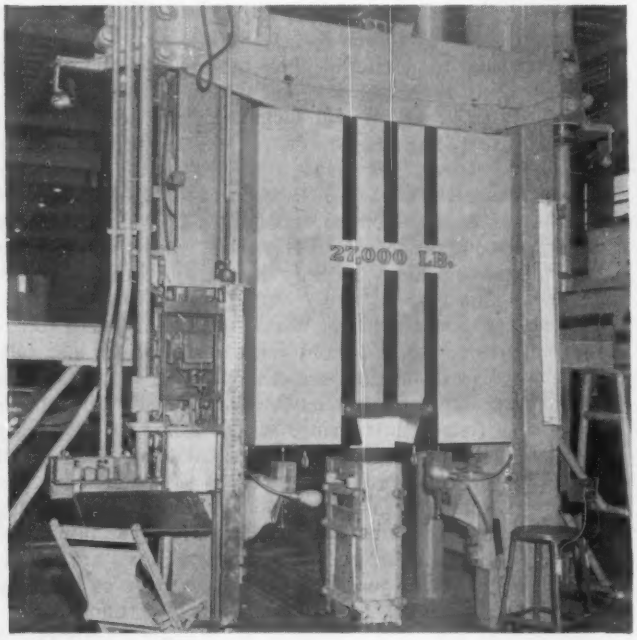
JOURNAL BOX SEALS
Oil retaining ability of rear seals submitted for approval will be tested on this recently-built unit.



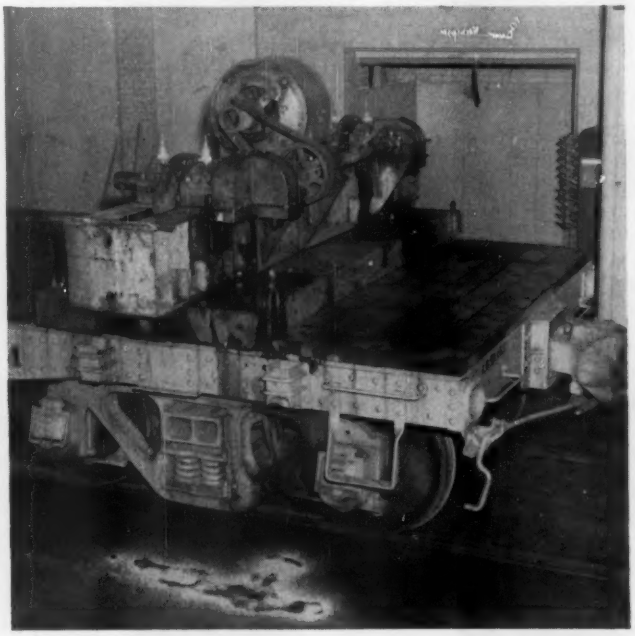
BRAKE CYLINDER LUBRICANT
Accelerated tests of the efficiency of greases for critical air brake application will be carried out.



AIR HOSE GASKETS
Motion of cars can be duplicated for gasket tests. Another set-up permits low temperature tests.



DRAFT GEARS
New tup for the test machine in the Research Center along with its new instrumentation will make possible more thorough analyses. AAR certifies new draft gears and conducts periodic checks after gears have been in service for varying lengths of time.



SNUBBERS AND TRUCK WEAR
Oscillator mounted on AAR flat car will be used for stationary tests of snubbers and truck component wear. Much cooperative work is done with member railroads on various projects and results of individual road experiments are frequently distributed.

load distribution over the oil film under solid journal bearings are now underway. Studies are being made to show the effects of reducing the crown radius of the journal bearing wedge from 78 in. to either 60 or 50 in. Investigation is also continuing to determine a condemning limit for journal wedges worn on top.

Solid Bearing Studies

Load-distribution tests are being made on solid bearings to determine what changes can be made in the contour of the bearing back to improve performance. Laboratory investigation continues on aluminum bearings lined with AAR babbitt to develop a bearing which can be road tested. Actual service tests will then explore the possibilities these bearings might have over the present AAR bronze bearing. Equipment and procedures have been set up for the development of better back seals for journal boxes. Oil loss from boxes has been an increasingly critical problem as the use of journal lubricators has increased.

A new machine is testing air-brake-cylinder grease at temperatures ranging from 130 deg F to minus 45 deg. This same temperature range is also used for tests of air-hose gaskets. Recently built and set up in the laboratory is a machine which simulates the movement of air hoses in train service.

Tests of 13 different types of diesel fuel oil filters are nearly completed. Tests indicate the fuel filtering surface should be greatly increased. Unless this large area is provided, a filter will have either high efficiency or long life, but not both.

New equipment in the mechanical laboratory includes a 300,000-lb Olsen testing machine for tension and compression tests. An all-purpose milling machine, wheel-boring mill, and lathe have been installed. Smaller machine tools are now available for the fabrication of test equipment.

15% more torque from the same air pressure while consuming 30% less air! *It's the new*

SIOUX

Air impact wrench!

"Free as the air" is an expression which has little application to compressed air. Learn more about the truly remarkable efficiency of the new SIOUX Air Impact Wrench.

Unexcelled Performance and Durability....

It's the

SIOUX

Electric impact wrench

When it comes to electric impact wrenches, here is the maximum in dependable power per dollar. Available in ½" or ⅝" drive.

PELICAN

Spin nuts on or off without touching them . . . it's the *new* SIOUX

"Pelican" NUT ACCUMULATOR

Action of the impact wrench removes nuts and spins them up into the Pelican on a center stem. The stem will hold ten ¾" or 13/16" hex nuts, either 7/16" or ½" thread. Reverse action spins the nuts back on. Stems can be removed with their load of nuts and empty stems installed in their place. Or, stems can be pre-loaded and placed in Pelican for assembly operations.

The Pelican may be used with any ½" or ⅝" square drive, air or electric impact wrench.

PELICAN IN USE WITH NEW SIOUX AIR IMPACT WRENCH

LOADED CENTER STEM

LOOK UNDER "TOOLS—ELECTRIC"

WRITE FOR THE NEW CATALOG

SIOUX

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SIOUX CITY, IOWA, U.S.A.

NEW AIR IMPACT WRENCHES • NEW AIR SCREWDRIVERS • NEW "PELICAN" NUT ACCUMULATORS • ELECTRIC IMPACT WRENCHES • DRILLS • GRINDERS • SANDERS • POLISHERS • SCREWDRIVERS • PORTABLE SAWS • VALVE FACE GRINDING MACHINES • FLEXIBLE SHAFTS • ABRASIVE DISCS

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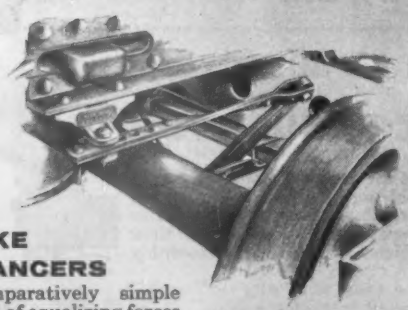
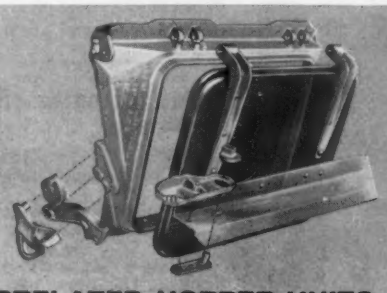
The nation's railroads are noted for many great transportation achievements . . . one of the most important being the efficient handling of the country's heavy bulk freight.

Since 1912, The Wine Railway Appliance Company has designed and manufactured many of the important parts of hopper, gondola, flat and box cars that make this handling function possible, as well as profitable, for the owners and users of the cars. In the years ahead, Wine will continue, through its experience, engineering know-how, and manufacturing skills, to keep pace with the needs of the railway industry.



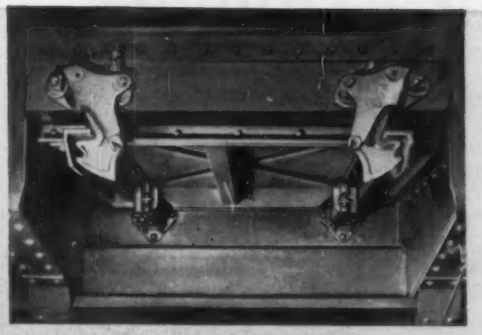
BRAKE BALANCERS

A comparatively simple method of equalizing forces and "balancing" the conventional brake arrangement by replacing the dead lever connection to the truck bolster with the Wine Balancer—connected to the car underframe. A bracket and connector at each end of the center sill flange, engaging the dead lever, balances the brake forces by returning them to the underframe of the car.



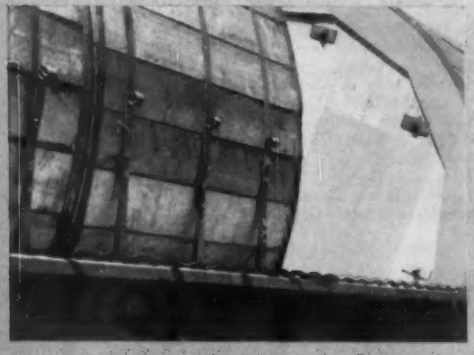
CORRELATED HOPPER UNITS

The one-piece, cast steel frame unitizes each individual hopper into a structurally sound, functional assembly which assures positive door fit. The adjustable locks, cast steel hinges, and symmetrical tapered door flange make possible the *only* adjustable door fit permitting compensation for wear or common irregularities of construction. "Balanced" unloading is assured by dual door operation and a method of controlled flow.



DROP BOTTOM SPRING HINGES AND ADJUSTABLE LOCKS

Drop Bottom Gondolas equipped with these two Wine products provide the shipper and receiver of the lading with a positive closure and afford a fast, economical one-man operation, with selective single or multiple opening of doors.



CONTINUOUS LADING BAND ANCHOR

Wine's continuous offset bar for top-coping applications provides a secure anchor for lading bands every 7½" of its entire length. Permits the use of all types of banding material.

DROP END LOCKS AND END BALANCERS

The *complete* drop end combination from operating and security standpoints! Interlocked corners provide rigidity to keep the sides from spreading under load. The balancer incorporates the hinge function . . . permits a one-man, time and labor saving closure.

UNIVERSAL LADING BAND ANCHORS

Easily applied on all flat cars and gondolas, the Wine Universal Type Anchor features 360° rotation for tie-ins from any direction. Versatility of use permits welding on coping at important locations as well as mounting in the floor. Drop flush when not in use.

ADJUSTABLE HOPPER DOOR LOCKS

The adjustment feature allows compensation for construction differences and readily permits adjustments necessitated by wear. Wine Adjustable Hopper Locks are adaptable to built-up, structural hopper openings as well as cast steel frames.

Latest Electrical Equipment Exhibited

by Railway Electric Supply Manufacturers

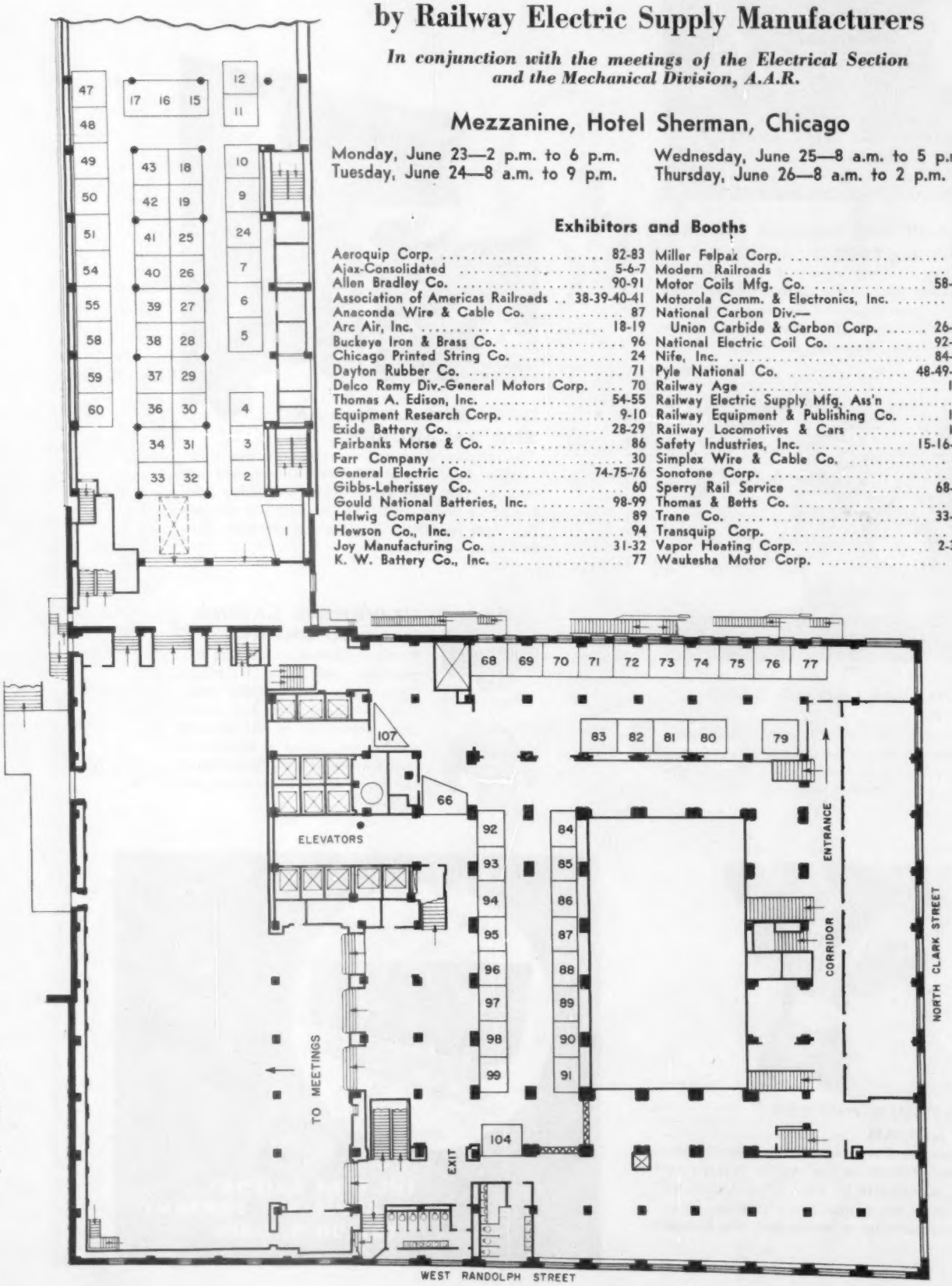
In conjunction with the meetings of the Electrical Section and the Mechanical Division, A.A.R.

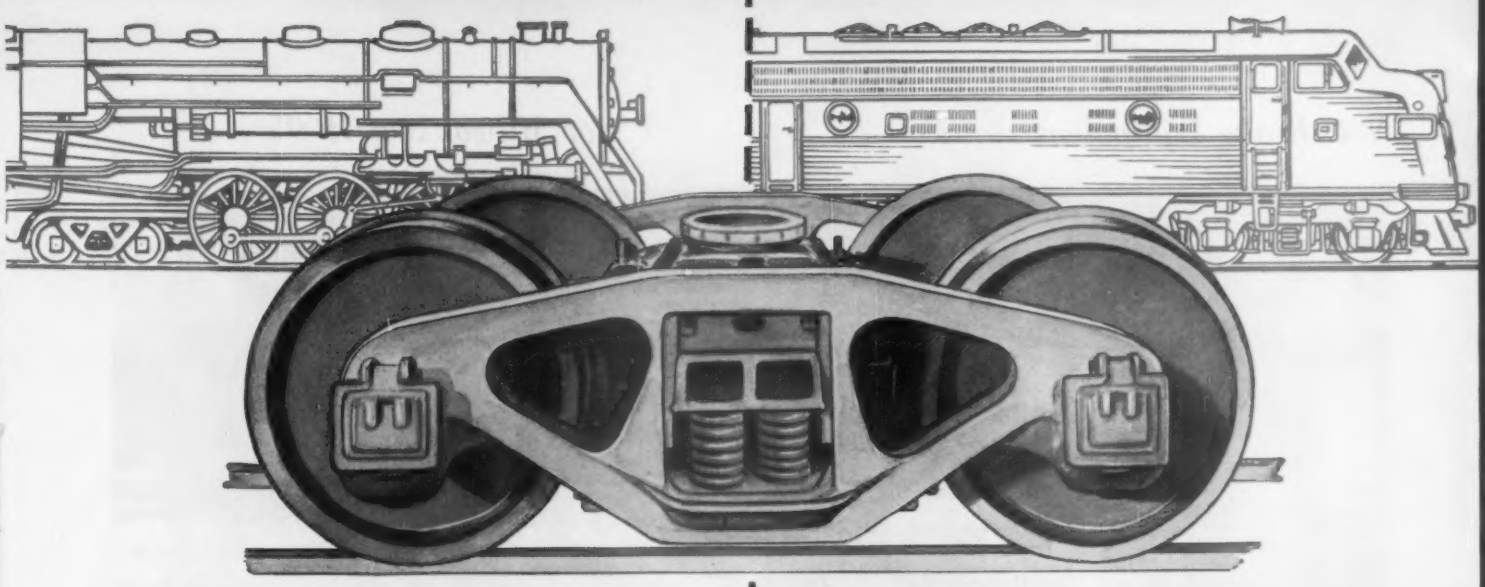
Mezzanine, Hotel Sherman, Chicago

Monday, June 23—2 p.m. to 6 p.m.
Tuesday, June 24—8 a.m. to 9 p.m.
Wednesday, June 25—8 a.m. to 5 p.m.
Thursday, June 26—8 a.m. to 2 p.m.

Exhibitors and Booths

Aeroquip Corp.	82-83	Miller Felpax Corp.	97
Ajax-Consolidated	5-6-7	Modern Railroads	81
Allen Bradley Co.	90-91	Motor Coils Mfg. Co.	58-59
Association of Americas Railroads	38-39-40-41	Motorola Comm. & Electronics, Inc.	73
Anaconda Wire & Cable Co.	87	National Carbon Div.—	
Arc Air, Inc.	18-19	Union Carbide & Carbon Corp.	26-27
Buckeye Iron & Brass Co.	96	National Electric Coil Co.	92-93
Chicago Printed String Co.	24	Nife, Inc.	84-85
Dayton Rubber Co.	71	Pyle National Co.	48-49-50
Delco Remy Div.-General Motors Corp.	70	Railway Age	104
Thomas A. Edison, Inc.	54-55	Railway Electric Supply Mfg. Ass'n	1
Equipment Research Corp.	9-10	Railway Equipment & Publishing Co.	107
Exide Battery Co.	28-29	Railway Locomotives & Cars	104
Fairbanks Morse & Co.	86	Safety Industries, Inc.	15-16-17
Farr Company	30	Simplex Wire & Cable Co.	80
General Electric Co.	74-75-76	Sonotone Corp.	36
Gibbs-Leherissey Co.	60	Sperry Rail Service	68-69
Gould National Batteries, Inc.	98-99	Thomas & Betts Co.	88
Helwig Company	89	Trane Co.	33-34
Hewson Co., Inc.	94	Transquip Corp.	66
Joy Manufacturing Co.	31-32	Vapor Heating Corp.	2-3-4
K. W. Battery Co., Inc.	77	Waukesha Motor Corp.	25





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...from waste to → JBS ACME JOURNAL LUBRICATORS

A Great Step Forward!

With waste gradually being discontinued in journal lubrication, the change-over to a better type of lubricator raises certain questions: what type should it be; what qualities should it possess; what kind of a performance should be expected of it? To help you decide, consider what the JBS Acme Lubricator offers and compare it with any other lubricator. JBS Acme alone has the exclusive all-wool quilted core* which retains many times its own weight in oil reserve. Heavy chenille loop pile surfaces assure an ample supply of filtered oil at all times. JBS Acme Lubricators are unaffected by temperature changes and wick AAR specification car oil even at 45° below zero in road service tests. JBS Acme Lubricators require no modification of the standard journal box, are designed to hold their position in the box, and assure better performance with less servicing.

Write Today for Detailed Information and Folder

- ★ Retains oil up to 4 times its own weight
- ★ Requires no modification of journal box
- ★ Wicks AAR specification car oil even in coldest weather
- ★ Assures better performance with less servicing
- ★ Has exclusive all-wool quilted core*
- ★ Reinforced for extra wear
- ★ Cannot glaze
- ★ Readily reclaimed

GUARANTEED Quality, Workmanship and Material as represented

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*Patent applied for

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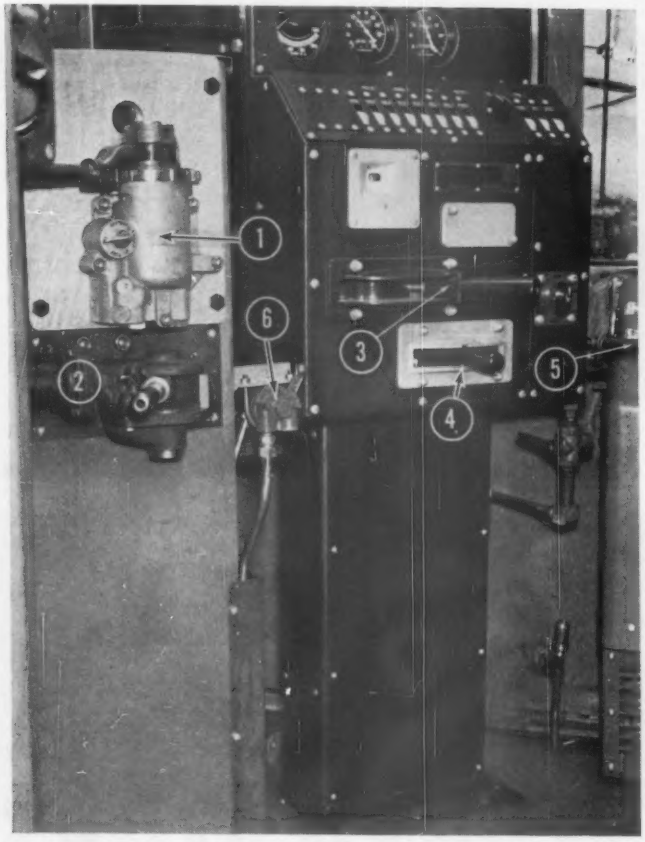
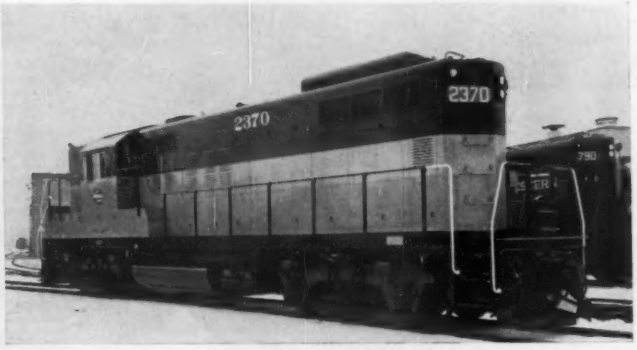
New Brake Equipment . . . . .



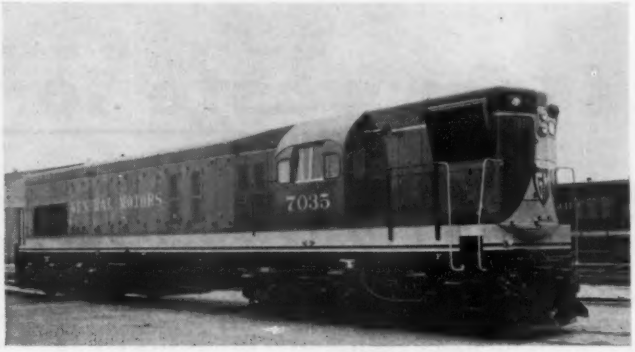
Cab controls include (1) automatic brake valve, (2) independent brake valve, (3) throttle, (4) reverser, (5) horn valve, and (6) bell operating valve.

. . . . . for Milwaukee GP-9's



Along with 26-L brake, Milwaukee "geeps" have full electrical control instead of conventional electro-pneumatic arrangement.

. . . . . and for Export G-16's



Export G-16 with "26" equipment was tested in Chicago area before going abroad as a demonstrator.

EMD Applies 26-L Locomotive Brake

Westinghouse Air Brake designed equipment to simplify maintenance and have all latest braking refinements

THE FIRST APPLICATION of the new Westinghouse Air Brake 26-L brake equipment has been made by Electro-Motive to 10 GP-9 road switchers recently delivered to the Milwaukee Road. Erie Mining Company's tests on the AC valve for freight cars *(RL&C, August 1957, page 52)* and experience with lightweight train equipment *(RL&C, October 1956, page 66)* paved the way for the 26-L locomotive brake.

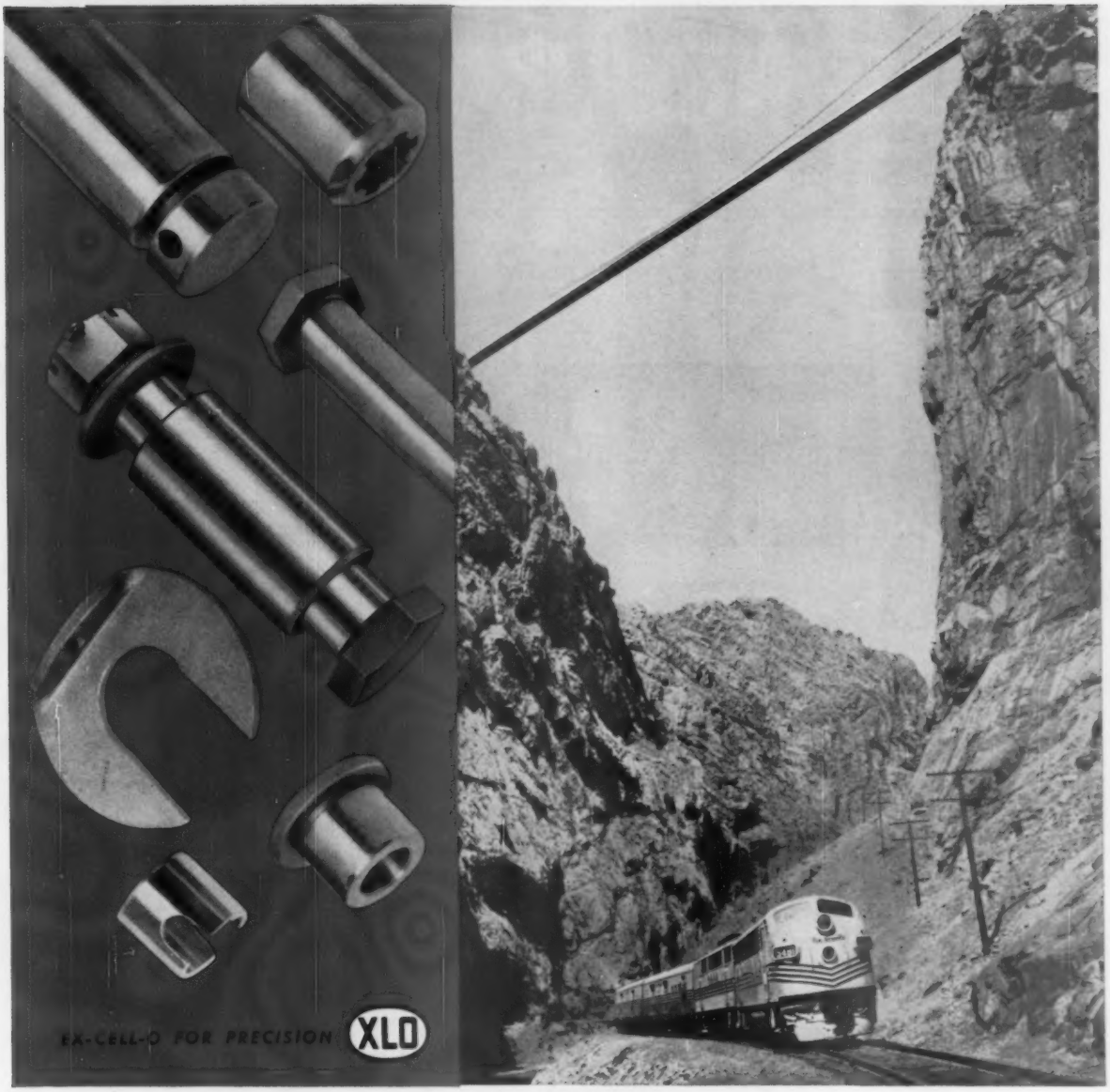
The equipment features a brake valve which eliminates the feed valve and equalizing portion. Train line leakage is maintained in all positions of the brake valve except emergency. Rubber-faced valves, rubber diaphragms, and "O" ring-packed spool valves are used. These lightweight and small size valves take the place of rotary valves, slide valves, and piston and ring assemblies. This construction simplifies repair and maintenance procedures. Braking power can be varied by using different diaphragm ratio relays.

Basic Equipment

• The 26C brake valve is a self-lapping automatic type, having two main portions. The automatic portion regulates brake pipe pressure controlling both locomotive and train brakes. The independent portion applies and releases the locomotive brakes independent of the train brakes; and it controls release of a locomotive automatic brake application independent of the train brakes.

• The independent brake valve controls locomotive brake cylinder pressure. Movement of the handle increases the pressure in proportion to handle movement. Depression of the handle in release position causes release of any auto-

(*continued on page 46*)



Rough country on pins and bushings . . . best reason for specifying Ex-Cell-O

Colorado country is beautiful—but rough on pins and bushings. As passenger cars stretch and strain over torturous mountain passes abrasive sand and grit want to eat away at the finish of pins and bushings. No wonder Ex-Cell-O is first choice by over 200 U.S. and Canadian railroads!

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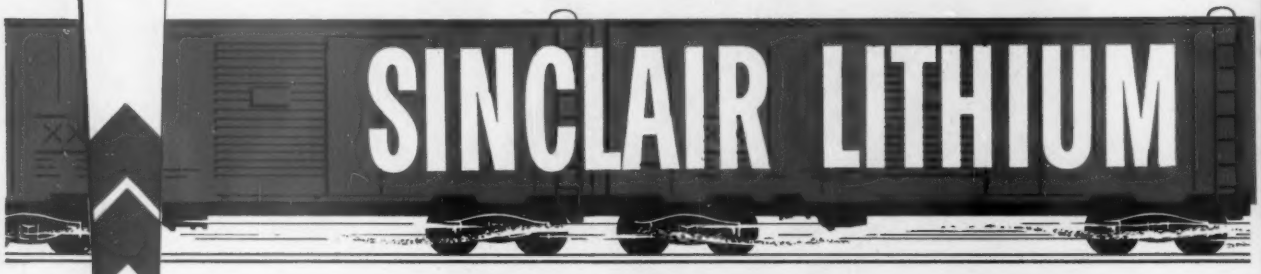
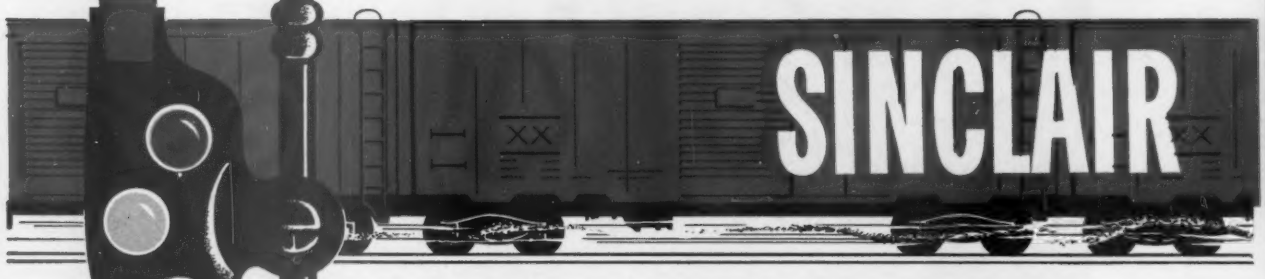
57-29

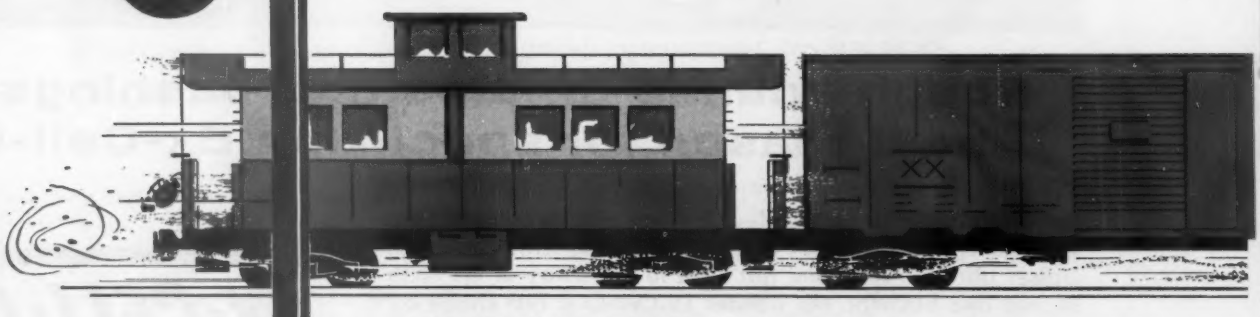
Today, more than 100 U. S. railroads prefer Sinclair GASCON® OILS. Only a tried, tested and outstanding oil could make and *keep* a record such as this.



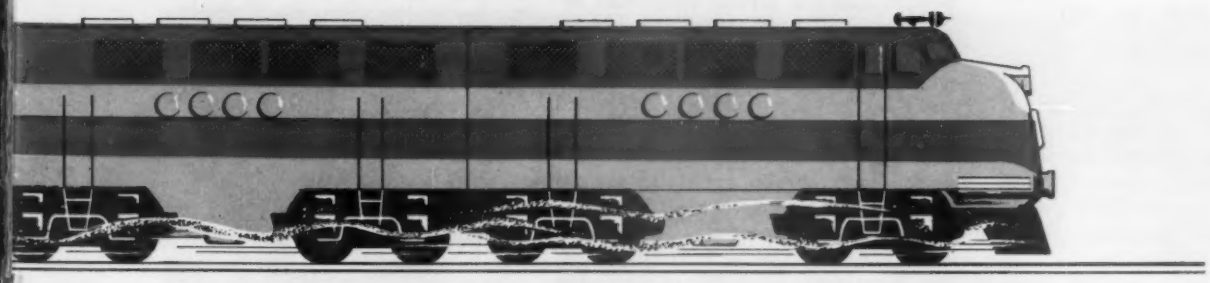
Proved superior for Diesel locomotive and car journal bearing lubrication. A.A.R. approved.



Unsurpassed for heavy-duty work in Diesel traction motor gears.



Only Sinclair Diesel Fuel contains the amazing rust inhibitor RD-119®. Used regularly, it effectively *stops* damaging rust and corrosion in fuel systems.



ROLLER BEARING GREASE

JET LUBRICANT TM

SINCLAIR DIESEL FUEL

SINCLAIR RAILROAD LUBRICANTS
...for Superior Diesel Performance

SINCLAIR REFINING COMPANY • RAILWAY SALES • NEW YORK • CHICAGO • ST. LOUIS • HOUSTON

EMD Applies 26-L Brakes . . .

(*Continued from page 42*)

matic brake application on the locomotive.

• The 26D control valve responds to changes in brake pipe pressure, developing brake cylinder pressure from brake pipe reductions with reference to the control reservoir pressure. This control valve consists of two portions—service and quick release.

• The J-1 relay valve is diaphragm-operated and self-lapping. It supplies and exhausts brake cylinder air pressure during brake applications.

Additional modifications to the basic equipment can be made to provide:

1. Multiple-unit control of independent brake funcitions with break-in-two protection. An MU Valve and Selector Valve permit multiple-unit operation with 6SL, 6-BL, or 24-RL equipment. This arrangement is universal and provides positive brake control under any operating condition.

2. Safety-control function for overspeed, foot pedal, and train stop is controlled from the equalizing reservoir, and permits uniform service reductions independent of train length. Equipment required for this application consists of an extremely small P-1 application valve and the usual foot pedal and overspeed details.

3. A dynamic-brake interlock prevents service brake applications from applying on locomotive while using dynamic braking. Emergency applications will nullify the dynamic brake interlock. The independent brake can be applied at any time. Only a three-way magnet valve and pressure switch are required to provide this interlock and over-riding function. The automatic brake will not reapply after the dynamic brake is released.

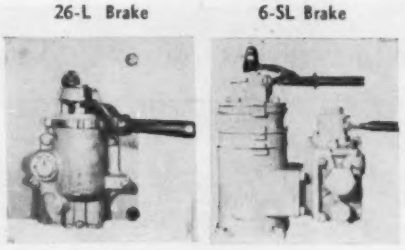
4. A break-in-two interlock can be provided to reduce engine speed to *idle* position and apply brakes in event of rear-end application or train break-in-two.

5. A 60-second sanding period can be provided in emergency. This will prevent emptying the sand boxes and conserve main reservoir air.

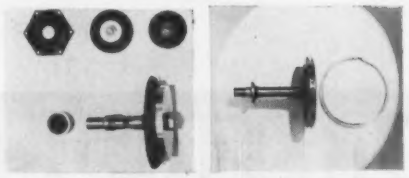
Comparison of Features

26-L Locomotve Equipment	24-RL Equipment	6 Equipment—6-BL and 6-SL
Graduated release	Graduated or direct release	Direct release
Pressure maintaining	Pressure maintaining available when required	Pressure maintaining not available
Emergency valve in brake valve	Emergency valve in brake valve	Separate emergency valve required
Safety control and train stop cut-off function included in brake valve.	Safety control and train stop cut-off function included in brake valve.	Cut-off function provided with separate application valve.
Diaphragm valves	Pistons and rings with bushings	Pistons and rings with bushings
Spool valves	Slide valves	Slide valves
Renewable parts	Repaired by hand lapping	Repaired by hand lapping
Universal multiple-unit	Trains only with similar type	Trains only with similar type
Not sensitive to oil and dirt	Surfaces subject to friction variation with dirt	Surfaces subject to friction variation with dirt

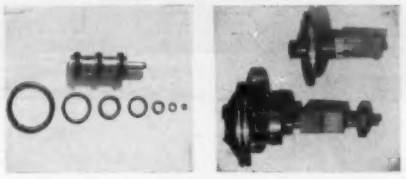
Some of the Changes . . .



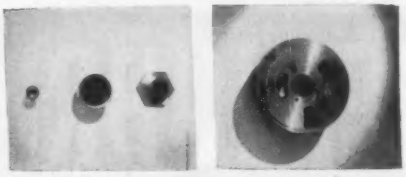
26-L brake valve — 6-SL brake valve



Rubber diaphragms replace pistons, rings, bushings.



Rubber "O" rings replace slide valves and seats.



Disc and poppet valves replace rotary valves.

New components in left column perform same functions as parts shown at the right.

PFE Mechanical Reefers

(*continued from page 28*)

new cars is accomplished through a modification of air-circulating equipment. PFE deep-freeze mechanical reefers previously built were of the "envelope" design which surrounds lading space with a blanket of cold air. The new cars are designed so that a portion of the cold air from the evaporator is directed in controlled amounts—approximately 20 per cent—through diffusers in the aluminum ceiling directly into the lading compartment and returned through an air channel under the floor racks.

Refrigeration equipment selected for the 50-ft cars, designed principally for frozen food service, is Carrier Corporation's Model 66-E-9 single compressor unit, driven by a GM Detroit diesel engine, Model 2-71, rated at 34 hp with a 15-kw generator.

Of the second 500 cars, 300 will be equipped with Trane refrigeration equipment, 175 with Carrier equipment, and 25 with Union Asbestos & Rubber (Equipment Specialties Division) secondary refrigeration systems. All will be powered with Witte Engine Works 18-hp diesel engines and 12.5-kw generators. Fuel tank capacity is 500 gal. on both 50-ft and 40-ft cars.

Temperature Control

All cars are equipped with magnetic-amplifier thermostatic controls. Compressors have electrically-controlled solenoid unloaders for ease of starting. Compressors also are unloaded when the lading-compartment temperatures reach a predetermined differential from the thermostat setting. This feature restricts refrigeration capacity, but results in obtaining desirable humidity control, due to lower temperature differentials in the air running in and out of the evaporator.

For fresh fruits and vegetables, constant temperatures can be maintained in any range as required between 32 and 70 deg F and for frozen foods temperatures can be maintained down to —10 deg F.

An indicating light, located under the running board on the "A" end of the car, is visible either from the ground or from the car roof. When lit, it serves as a "telltale" showing inspectors that equipment is operating satisfactorily and temperatures are within desired limits.

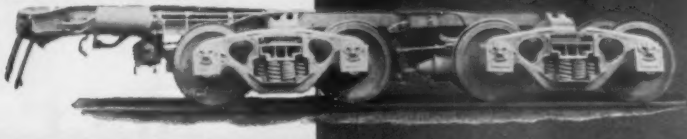
BUCKEYE *designed..*
—BUCKEYE *built..*

HEAVY DUTY TRUCKS

for 100 to 300 ton capacity freight cars

BUCKEYE EIGHT-WHEEL TRUCK INSTALLATION ON 175-TON CAPACITY DEPRESSED-CENTER CAR

BUCKEYE HEAVY DUTY EIGHT-WHEEL TRUCK



BUCKEYE HEAVY DUTY TWELVE-WHEEL TRUCK

BUCKEYE TWELVE-WHEEL TRUCK APPLICATION ON 250-TON CAPACITY SPECIAL CAR

BUCKEYE HEAVY DUTY SIX-WHEEL TRUCK

- Vertical Equalization—Lateral Flexibility
- High Quality Steel Castings
- Fewer Parts To Complete
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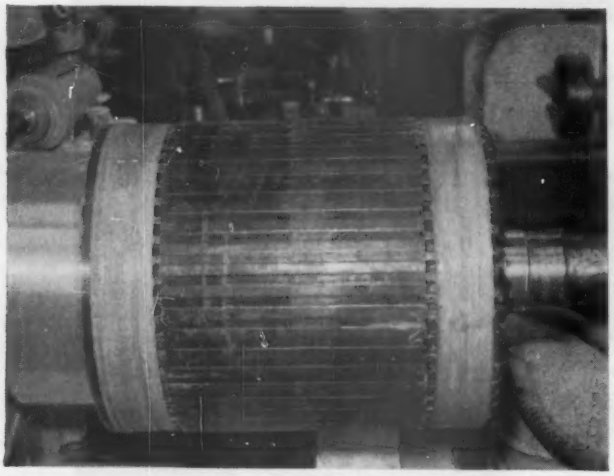
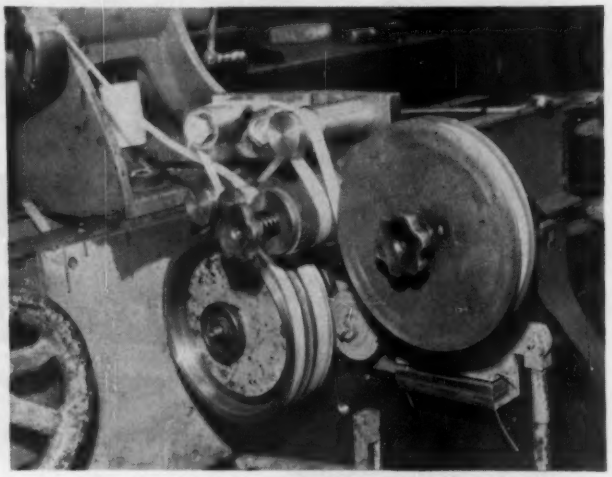


Railway motor armature with Fiberglas bands is ready for installation. In case of band failure here, it is claimed that damage would be confined to rotor. With steel bands the stator could also be damaged.



Tensioning device used by Westinghouse shops is threaded with FRP tape and ready for use. FRP tape made by Chicago Printed String Co. is known as Resi-I-Glas and can be used for this type of banding operation.

Banding Armatures With FRP Tape

Fiberglas reinforced plastic material has mechanical and electrical qualities for railway service

THE DEVELOPMENT of Fiberglas-reinforced plastics during the past 10 years has made available materials which can be used to band the armatures of motors and generators. These materials not only have the strength and mechanical advantages of steel bands, including that of application under required tension, but they are also insulators and nonmagnetic.

D-c armatures and a-c wound rotors have their conductors wound on the outer surface of the rotor. The active sections of the coils are arranged in slots, but the end connections lie on the outer surfaces of the coil supports.

These conductors have to be held in place against centrifugal forces created by the rotation of the machine. Such centrifugal forces may be 1,000 to 5,000 times the weight of the windings depending upon the speed and diameter of the rotor. To keep efficiency high, the air gap has to be relatively small.

Alloy steel wire, cold drawn to the highest available strength, has been used to form the bands for restraining these conductors. It is wrapped around them in a number of convolutions and in sufficient layers to hold the conductors against centrifugal forces.

Band strength is not the only requirement. The conductors are held in place against the effects of electromagnetic vibration by the proper filling and tightening in the slots. In addition, they are held against centrifugal force by slot wedges or core bands. On the end windings, end connections have to be properly wedged against each other and drawn into a continuous arch which has the proper pressure between all conductors and between the conductors and the coil support to prevent electromagnetic vibration between coils.

It is necessary that the band has residual tension at least equal to the maximum created by centrifugal force so that breathing of the conductors with speed changes is kept to a minimum. At standstill, the band tension will be resisted by the arching pressure between conductors and the pressure against the coil supports. These requirements are met by winding the wire on the coils with a tension equal to or greater than that obtained by centrifugal force at maximum operating and test speeds. In the past, wide steel straps have also been used as bands. In general they have not been satisfactory because of a lack of residual tension.

Steel wire banding has usually been secured by clips and solder. Failures of this type of fastening in extreme applications led to an important development —the solderless band. Actually, this is a means of locking the ends of the wire band to each other so that the strength of the band is entirely independent of any solder which may be used to prevent the band from moving or separating.

All metallic bands must be insulated from the conductors. This is usually done with insulating pads between the bands and the windings. These pads, however, do not completely insulate against creepage currents in severe applications such

(*continued on page 50*)

This article was written by Wm. Schneider, engineering manager, Apparatus Repair, Manufacturing and Repair Division, and W. H. Eunson, engineering consultant, Westinghouse Electric Corporation, Pittsburgh, Pa.

**LENGTHEN ENGINE LIFE,
REDUCE MAINTENANCE**

Esso Airfil Coating Oil adds outstanding dirt pick-up properties to diesel air intake filters. Airfil protection is so effective that it pays off handsomely in reduced abrasive wear, lowered repair costs, longer engine life. ¶ Airfil also shows superior wicking qualities. Successive layers of dirt and dust are quickly wetted, exposing a fresh, efficient dirt-retaining surface at all times. ¶ Applying Airfil is simple. It goes on rapidly as a hot liquid and cools to a gel-like solid that retains its consistency at engine-room temperatures. And since Airfil is insoluble in water, it stays on the filters, even in the wettest weather. It can, however, be readily removed by a hot detergent wash or a steam blast.

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ESSO
RAILROAD PRODUCTS

Banding Armatures . . . .

as armatures in locomotive motors and generators. In high voltage armatures, the steel bands have to be completely covered with insulation.

FRP Tape Banding

The Fiberglas used for armature banding is in the form of a tape with the glass fibers laid up in the longitudinal direction only, without cross-weave, held together with polyester resin in a semicured state. Some of the properties of Fiberglas are a tensile strength of 400,000 psi; a modulus of elasticity of 10,500,000 psi; no creepage and no hysteresis. When filled with resin and cured, fiberglas exhibits excellent electrical properties—its dielectric strength varying between 80 and 600 volts per mil and a minimum arc resistance of 180 sec.

The Fiberglas reinforced plastic tape is made up in various widths all .013 in. thick in the semicured stage. Maximum permissible tensions before curing for the various widths of tape available are: ⅜ in.—350 lb; ½ in.—465 lb; ¾ in.—700 lb; 1 in.—930 lb; 1¼ in.—1,170 lb and 1½ in.—1,400 lb.

In the application of Fiberglas bands to armatures, it is necessary first to pull the armature coils down into their final position by any approved method now in use. These include temporary banding, reroll banding, or in clamping in "squeeze box" followed by driving of armature wedges or sticks in place.

The armature is then heated to approximately 125 deg C and placed in a banding lathe. This initial heating has been found by test to be an important step in the process. Test bands placed on a cold armature relax during the final cure.

The band locations are then determined; and if the banding tension requirement is in excess of 200 lb, restraints are placed around the armature to prevent successive layers of the glass tape from squeezing the underlaying layers out of position. This is especially important where the band at the pinion end rides almost over the curvature of the coil knuckles.

These restraints are also generally made to the height of the finished band so its thickness can be properly gaged. Various methods of placing these restraints have been devised. It is also customary, but not necessary, to cover the edges of the band with a serving made of woven glass tape heavily filled with polyester. This covers the somewhat rough and sharp edges left by the layers of the tension taping. Where the tension band is to cover large gaps between the armature coils, it is necessary to cover these gaps with strips of .015-in. laminate.

The bands should be wound on with sufficient tension to stretch them somewhat more than would be done by the centrifugal force. This pulls the coils down into their final position and arch binds the end turns preventing coil movements due to changes in speed. Generally such tension is determined from the original steel band design which specifies wire size, number of turns, as well as tension. For steel wire bands in Westinghouse railway motors, the following tension table has been developed:

Wire Diameter, (In.)	Single Band (Lb)	Double Band, Upper Layer (Lb)
.029	90	60
.045	225	150
.057	350	250
.064	400	300
.072	500	400
.081	600	500

Because of the multiple layers in Fiberglas banding, the tension used is that corresponds to the upper layer of steel wire bands.

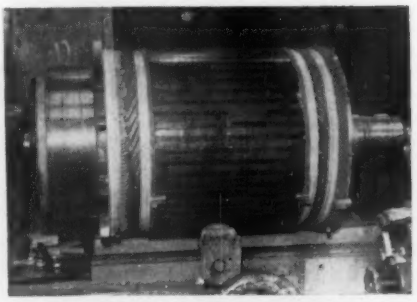
A tension device, suitable for winding the Fiberglas tape on an armature, is used by all Westinghouse apparatus repair shops. It is capable of applying the Fiberglas bands at tensions up to 600 lb. This device can also apply the wire temporary bands.

Because of the difference in ultimate strength, the FRP band cross-section is approximately twice the cross-section of the steel wire band. This is determined from the ultimate strength of the composite Fiberglas and polyester resin which is 120,000 psi at room temperature and between 85,000 psi and 100,000 psi at the maximum operating temperature of the band, as compared to 220,000 psi for stainless steel with a proportional limit of 175,000 psi.

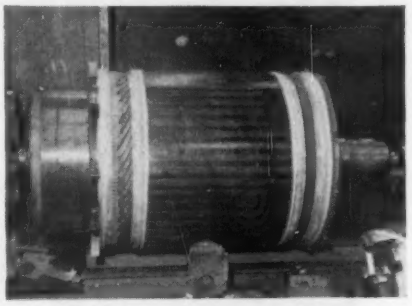
When each tension band is completed, the end of the tape is secured by applying a hot iron to the section just ahead of the point where the tape is cut. Heat accelerates the polymerization of the end of the tape just enough to cause it to adhere to the body of the band. The tape can then be cut without danger of unwinding.

When a smooth, glossy band surface is desired, it is covered with one or two layers of woven tape impregnated with polyester. This is the same tape used for serving the edges. After the bands are applied, they should be covered with a brushed-on coat of varnish to prevent air inhibition. They are then baked at 125 deg C, (255 deg F) for four to six hours to fully cure the polyester resin.

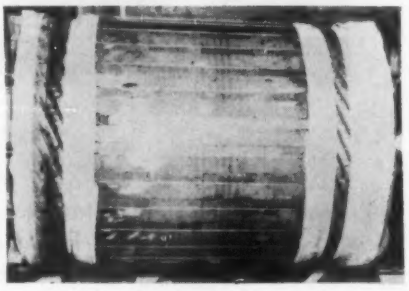
The Preliminary Steps . . .



Lateral restraints installed on armature can also serve as gauges to measure the band thickness.



Laminated strips cover large gaps in windings and are added after lateral restraints are in place.



Armature has edge-serving tape wound on to cover the sharp edges that result from tension taping.

After final dipping and baking the armature is ready for balancing.

Armature Balancing

A dynamic balancing machine is used to locate necessary balancing weights. Two general methods of securing these weights to the bands are used. In one, an epoxy-filled compound, with about 60 per cent of its weight in lead, is mixed with a catalyst, and immediately placed on the band. It air cures in one or two hours. With infrared lamps or Calrod units, curing time can be reduced to as low as 15 min.

In the second method, small pieces of copper-plated lead, 1/16-in. thick, are cut to suitable size and weight and are cemented to the band with high-strength adhesives. One such adhesive cures at room temperature in one to two hours, although it does not obtain its maximum

(*Continued on page 52*)

Here's proof that WIPING WASTE absorbs over four times as much oil as cloths!

. . . certified test report available on request

In precise, scientific tests conducted by a prominent Chicago engineering firm, cotton wiping waste and wiping cloths were compared to determine their absorptive qualities. Samples were tested under identical, controlled conditions. The carefully tabulated figures prove once and for all that wiping waste absorbs 443% as much oil as the same amount of wiping cloth! The complete report of these tests has been prepared and is available free upon request. Use the convenient coupon below.

Actually these new tests only bear out old facts already known to most users of wiping waste. Wiping waste, consisting of all new, uniform threads, is by its very nature more consistently efficient. What's more, since good quality wiping waste can be purchased at a much lower initial cost per pound than proper quality wiping cloths, waste is considerably cheaper to use.

All in all, it adds up to one thing: You'll get more efficient performance, at lower cost, by switching to cotton wiping waste.

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INSTITUTE OF THREAD MACHINERS, INC.

84 Field Point Road
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Institute of Thread Machiners, Inc.
84 Field Point Road
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Dept. RL-2

Gentlemen:

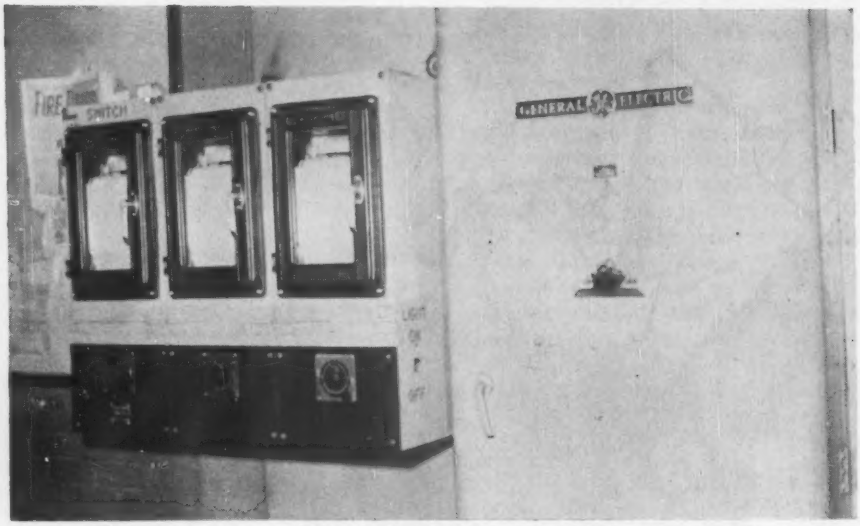
Please send me a copy of your engineering test report on cotton wiping waste.

Name_____

Organization_____

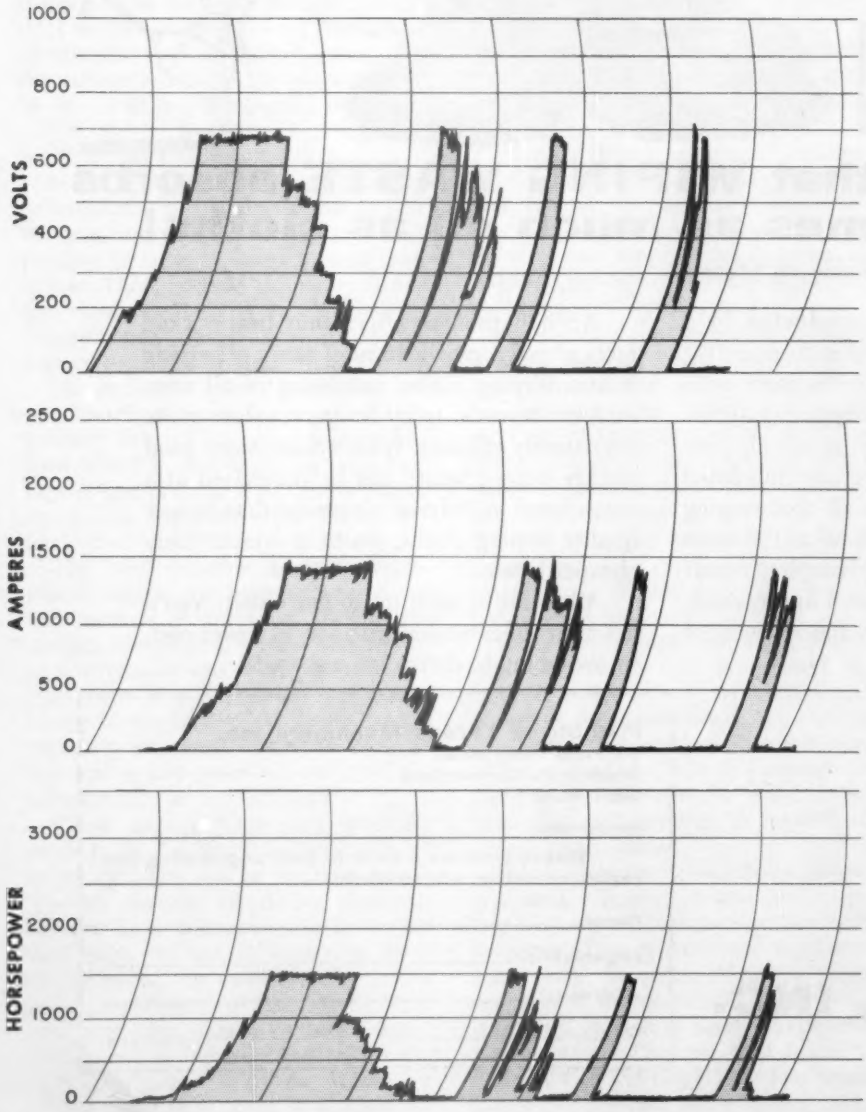
Address_____

City_____ Zone____ State_____



The three curve-drawing meters record volts, amperes and horsepower while the locomotive power plant is loaded on the resister at the right.

Below: Typical meter charts obtained while an engine and generator are given a load test.



Putting Locomotive Performance on Record

Knowledge of engine and governor performance is acquired and recorded when load tests are performed on diesel locomotive power plants at Silvis, Ill. on the Rock Island. The engines and generators are loaded on General Electric load resistors. While the load tests are being made, three Esterline curve-drawing meters show power plant performance by recording volts, amperes, and horsepower. The third meter is, of course, a wattmeter, but the scale is corrected to show horsepower instead of kilowatts. Values of horsepower are better understood and no conversion is necessary.

The three charts are filed and serve as a check when subsequent tests or repairs are made on the locomotive. The charts also show the behavior of engine and governor in a manner which can not be determined by means of indicating instruments.

Banding Armatures . . .

(*continued from page 50*)

strength for 24 hr. In each of these methods, the varnish should be sanded off the part of the band to which the weight is to be applied. Sheet lead must be copper-plated because the plain lead inhibits the adhesive even when thoroughly cleaned.

Another method of balancing is to do the job before the Fiberglas bands are applied. Necessary weights are cut from sheet lead, and located on the armature. Such weights are placed on flexible mica pads about ½-in. wider and longer than the sheet lead and wrapped into the Fiberglas band after two or three layers are wound on the armature.

Placing balance weights on railway armature bands should be avoided as far as possible. Most modern armatures and commutator spiders are provided with grooves for attaching weights. Balancing the core before winding will keep the amount of weights to be added to the bands to a minimum. After balancing, the armature generally receives a final coat of air-drying varnish.

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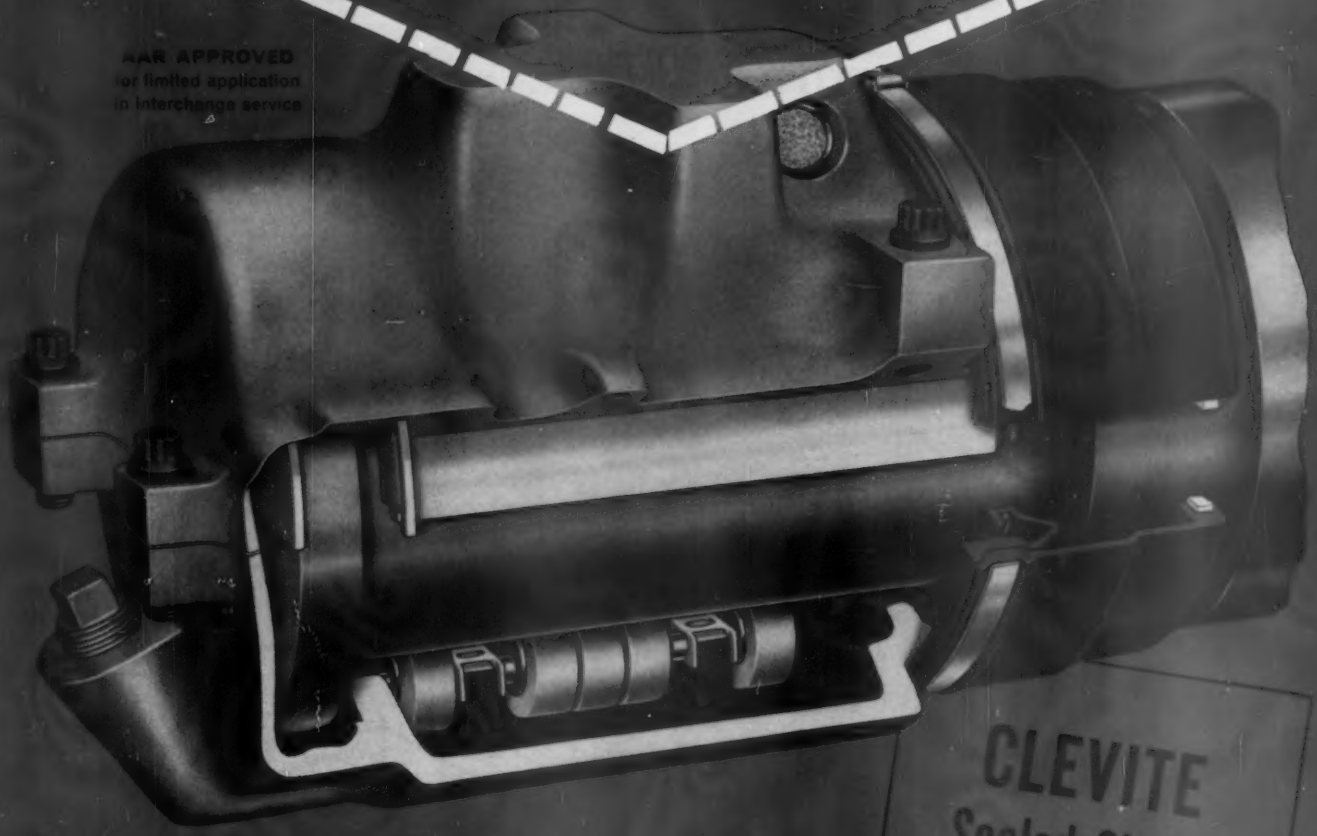
AAR APPROVED
for limited application
in interchange service



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...new, permanent, soundly engineered and economical journal bearing conversion for freight cars.

WHAT TESTS SHOW In continuing road and laboratory tests, under the hardest service and simulated operating conditions, the performance of Clevite Cartridges has far exceeded all expectations.

Also experience from the growing number of applications shows that Clevite Cartridges require less modification of equipment, are installed at lower cost than any other comparable conversion. ***WATCH FOR MORE TEST RESULTS!***

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The CLEVITE Bearing Cartridge is a development of Cleveland Graphite Bronze division of Clevite Corporation

now the famous one-piece Morton OPEN-GRIP running board gives you

the UNI-WING flange

Stronger

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The rugged, die-formed flanges of the *new* Morton **Open-GRIP** running board *aid* installation, *eliminate* welded brackets.

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Still the famous **Open-GRIP** KASS safety features and rigid edge construction for strength where it's needed.

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DEDICATED TO PROGRESS
RPI MEMBER

Above: A variable-speed motor drives the generator while the operation of the voltage regulator on the test rack is observed. The load resistor is placed above the test panel.

At right: Wayne Sharp, who operates the test equipment, is shown adjusting a voltage regulator.

Test Stand Checks Generators and Regulators

THE EQUIPMENT shown in the illustrations for testing both auxiliary and diesel locomotive voltage regulators was developed in the West Burlington, Iowa shops of the Chicago, Burlington and Quincy.

The generator to be tested is mounted on the stand at the left and is driven through four Vee-belts by a 15-hp variable-speed motor. Mounting plates have been made up for a variety of mounting bolt positions to permit the testing of all makes of auxiliary locomotive generators and exciters. The generators are run at speeds of 800 to 2,200 rpm and are loaded at top speed on ½-ohm, 150-amp resistor.

When testing EMD equipment, the resistor on the voltage regulator is first set with an ohmmeter. It is then placed on the rack below the test panel and the generator is loaded at high speed while the operation of the regulator is observed. The spring tension is adjusted to give 72 to 76 volts.

If the generator voltage is not constant under all operating conditions, the regulator is checked for sticking parts or looseness and necessary adjustments are made.

On the board, there is also a generator field rheostat which can take the place of the voltage regulator on higher voltage generators.

From the Diesel Maintainer's Note Book

The Engine Ran Without Fuel

To the Editor:

ON PAGE 54 of the April 1958 issue of *Railway Locomotives and Cars*, an article appeared which was titled "The Engine Ran Without Fuel." The story concerned an EMD switcher, and the diagnosis of the problem was correct. However, there is one point which I would like to clarify.

Most of the EMD locomotives run the return fuel pipe down near the bottom of the fuel tank, usually in the vicinity of the suction line. This is done to keep the suction area in the tank warm during cold weather. There is normally a ¼-in. vent hole in the return pipe just below the top sheet of the tank which acts as a syphon break and prevents the injectors from taking fuel from the return line. Evidently this hole was missing on the unit discussed.

When this hole is omitted, the engine-mounted fuel filter 5-psi sight glass will remain full after shut-down, which will be an indication of trouble. The problem can be corrected by adding a ¼-in. hole in the return line just below the top sheet of the fuel tank or by terminating the return line at the top of the fuel tank.

MAX EPHRAIM, JR.
Locomotive Section Engineer
Electro-Motive Division,
General Motors Corporation

LINE-RITE

keeps more cars in the line-up!

This is the LINE-RITE team... End Lining and Side Lining

When one of your high class lading cars loses a lining board or takes a punch in the side from a fork lift truck, your profits are hurt. LINE-RITE End Lining and Side Lining were developed by Standard to keep your high class lading cars in service by adding strength to the interior of your cars.

Use Both Members of the Team!

By using both members of the team—End Lining *and* Side Lining, you achieve the greatest possible protection for your cars. You'll reduce the number of cars out of service and have lower maintenance costs. Here's the story:

Added Strength!

End Lining's assembled metal and wood lining gives additional strength to the end of the car by distributing impacts over a larger area and allowing the corrugations in the outer steel end to exert resistance to impact as a unit. And the Side Lining, *four times stronger* than ordinary wood lining, affords strong protection from damage by fork lift trucks and tractors.

Maintenance Costs Slashed!

Dovetailed metal sockets provide solid backing the entire length of the board . . . lock each board positively and securely in place. New LINE-RITE End Lining and Side Lining virtually eliminate many costly operations in repairing interior linings of your cars!

Infestation Hazard Reduced!

End Lining's continuous steel member, after proper application, provides a positive wall which effectively blocks the infiltration of flour and grain into the space behind the lining.

That's How LINE-RITE Works!

That's the LINE-RITE line-up. End Lining and Side Lining working together to help keep your high class lading cars in service . . . your maintenance costs low. It's a good team to have working for you. Your Standard representative will give you the facts.

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division of STANDARD RAILWAY EQUIPMENT MANUFACTURING COMPANY

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REPORT FROM A LEADING MIDWESTERN RAILROAD

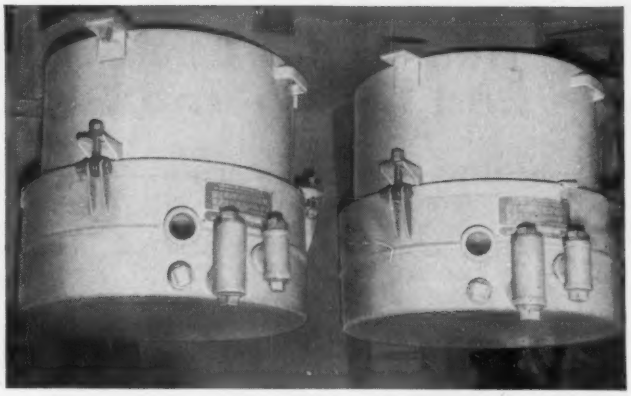
On 80 locomotives

...Air-Maze oil bath filters will

save thousands of dollars a year

by extending engine overhaul

Air-Maze Oil Bath Filter
removes 92% or more of all objectionable dirt from intake air. Photo shows installation on Alco 1500 horsepower freight unit.



The first Air-Maze oil bath filter installed on the air intake of a locomotive saved this railroad $4300.00 over a 27-month period. Since that time, 80 additional locomotives—switchers, road switchers, road freight and passenger locomotives—have been equipped with Air-Maze filters at the time of engine rebuilding.

Annual savings of $1900.00 realized by the first unit, have meant a return of over 300% on initial investment through reduced cost of power assembly changeouts and reduced cost of filter servicing. Because of reduced cylinder assembly wear and longer bearing life, plans are to extend engine overhaul periods 25% and more.

The only true, road-proved oil bath filter, Air-Maze provides effective air filtration at all engine speeds. It does not depend on air velocity to do an efficient filtering job. As a result, only clean, abrasive-free air enters the engine intake. The high dirt removing efficiency is unaffected by humidity or oil mist conditions.

Typical Air-Maze oil bath servicing consists of periodic filter oil changes in place usually at 3 or 6 month intervals and filter disassembly and complete cleaning at time of annual locomotive inspection.

Today over 3,000 Air-Maze oil bath filters are in use by over 75 domestic railroads . . . and many more now in foreign service.

For more information, write your locomotive builder or THE AIR-MAZE CORPORATION, Cleveland 28, Ohio. Dept. RL-6.

The biggest names in diesels are protected by Air-Maze filters

AIR-MAZE
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ENGINE AIR FILTERS • CAR BODY FILTERS • LUBE OIL FILTERS • PASSENGER CAR FILTERS

B & O puts 2,000 new hopper cars in service

To provide customers with even better service throughout its vast system, the B & O is adding 2,000 triple-hopper cars to its present big fleet. Shown above is a string of these brand-new cars right after completion at Bethlehem's Johnstown, Pa., shops. They are now rolling on B & O main lines in several different states.

In building this order of 2,000 hopper cars, Bethlehem incorporated many cost-saving standard features. The cars are essentially of riveted construction, and all plates and rolled sections are copper-bearing steel to reduce corrosion. Wheels are wrought steel, one-wear.

Other points of interest are as follows:

Load capacity, nominal	70 tons
Cubic capacity, level	2773 cu ft
With 10-in. average heap	3098 cu ft
Light weight	49,500 lb
Length inside	40 ft 8 in.
Width inside	10 ft 4 in.
Height, rail to top of side	10 ft 8⅛ in.
Diameter of wheels	33 in.
Size of journals	6 in. x 11 in.
Slack adjusters	Manual

When you are next in the market for cars, either standard or special, let Bethlehem quote on your specifications. Our engineering staff and car-building shops are equipped to meet your needs in every detail.

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On the Pacific Coast Bethlehem products are sold by
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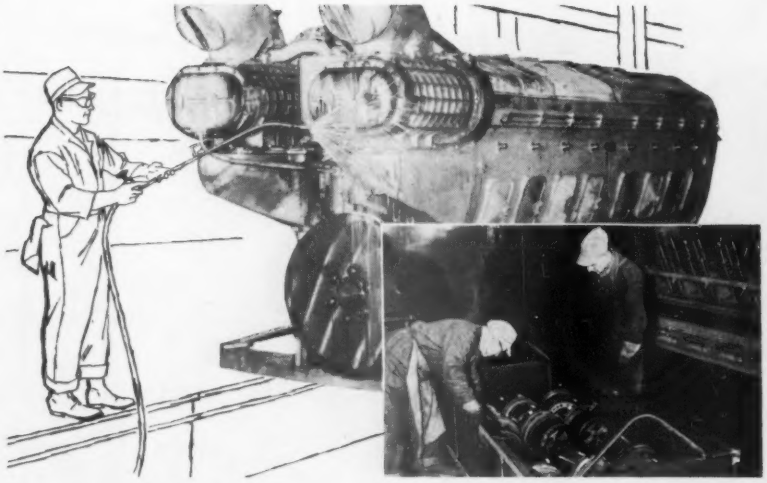
BETHLEHEM STEEL

BETHLEHEM STEEL



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LIX DIESEL CLEANERS

Give Amazing Results!

DOWN go maintenance costs when a railroad uses LIX cleaners for diesel cleaning!

Through years of experience in the railroad cleaning field, Lix specialists have developed a line of cleaners which meet ideally the needs of today's railroads for fast, efficient, economical maintenance. There is a Lix cleaner for any diesel cleaning job, no matter how dirty—for application by spray or immersion.

With LIX cleaners, no scraping or brushing is necessary . . . they *soak* away all grit, grime and caked carbon. In tank-cleaning of parts, Lix cleaners are harmless to all metals during cleaning cycle . . . and all metals can be cleaned in same tank at same time. Lix cleaners have good emulsifying qualities . . . leave no granular deposits . . . reduce after-rusting. Lix cleaners are *safer*, too—are of low toxicity, are not a fire hazard, and have *longer life* without frequent charges.

Evaporative type cleaners for spray application are also available.

You owe it to yourself to investigate the definite advantages of LIX cleaners . . . to *prove* to yourself how you can save time and money on periodic surface cleaning of locomotives and on overall cleaning of diesel parts! *Write, wire or phone for a* LIX DEMONSTRATION *in your shop—without cost or obligation!*

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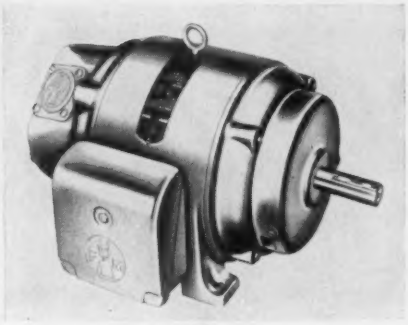
"Leadership in Industrial Cleaning"

What's New

(*Continued from page 22*)

zero applications, good elevated-temperature properties, and X-ray quality welds.

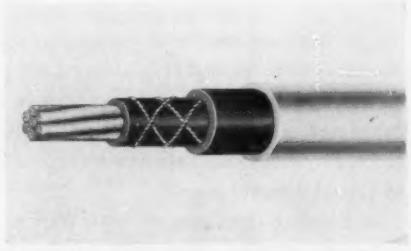
The Inco-Weld A wire comes in 36-in. lengths in diameters of 1/16, 3/32, 1/8, and 5/32 and on spools in smaller diameters. *International Nickel Company, Inc., Dept. RLC, 67 Wall st., New York 5.*



Capacitor Motors

These capacitor-start, induction-run, single-phase integral horsepower motors have been designed to provide high starting torque and operating efficiency. Capacitors of the dry electrolytic type and a rugged centrifugal switch are used.

These Type WCZK motors can drive pumps, fans, drill presses, lathes, sanders, circular saws and similar equipment. Drip-proof, corrosion-resisant cast iron frames are used. Motors for 115/230 volt operation are available from 3/4 hp to 1½ hp at 1,200 rpm, 1 hp to 3 hp at 1,800 rpm, and 1½ hp to 5 hp at 3,600 rpm. *Fairbanks, Morse & Co., Dept. RLC, Chicago 5.*



Locomotive Wiring Cable

This rubber-insulated, aluminum-sheathed cable, which is said to yield important space savings in the wiring of diesel locomotives, eliminates the need for conduit. The aluminum sheath is extruded over the underlying cable core and is not subject to the limitations in length found in some other aluminum-sheathed cables.

Besides eliminating the need for conduit and for separate pulling of wires, this construction is easily worked and can be fitted

(*Continued on page 62*)

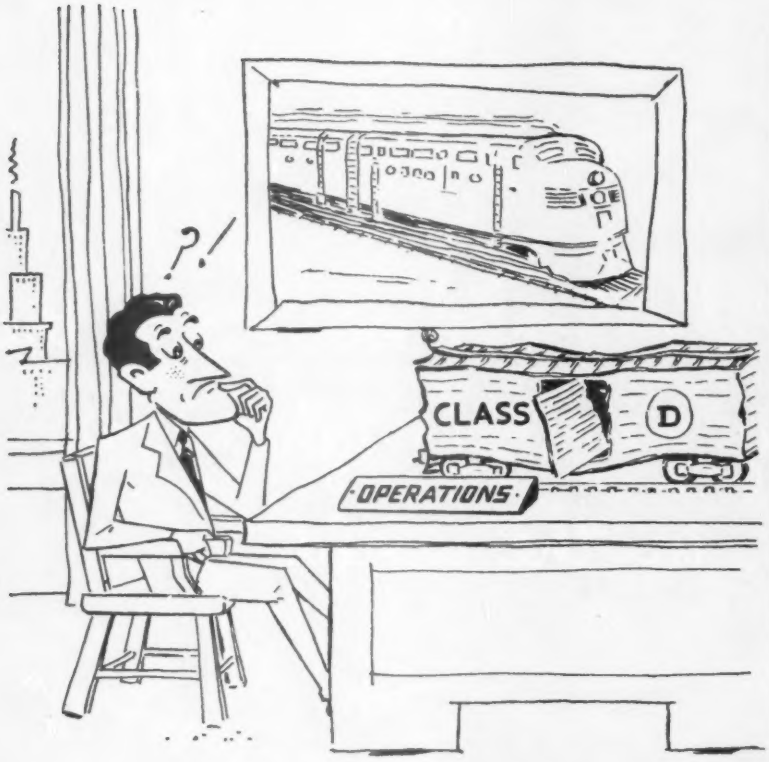
this is the backbone of the very finest freight car in the world

We don't know what "brand" of freight car this is—nor do we care—because WE ARE NOT CAR BUILDERS

. . . but we do know that a man who knows enough about underframes to specify this one could not build anything less than the very finest freight car in the world!

INTERNATIONAL STEEL COMPANY
RAILROAD DIVISION • EVANSVILLE 7, INDIANA

Precision fabricators of correctively designed components:
UNDERFRAMES . . . SIDE ASSEMBLIES . . . DOORS . . . BULKHEADS . . . FLOORS . . . HOPPERS



For the car "too-humped-to-help", most any upgrading is too costly. But where B and C cars must be made Class A and funds are limited, PLASTINAIL offers this:

1 — A super-smooth Class A floor

2 — That will outlast a new wood floor and remain in Class A service virtually all its life

3 — At as little as 2/3 the cost* of new wood.

*PLASTINAIL for ¾" coverage of a 40'-6" box car is only $138.

Installation time: approximately 20 man-hours.

Write, wire or phone for details

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OXYCHLORIDE CEMENT BOX CAR FLOORS

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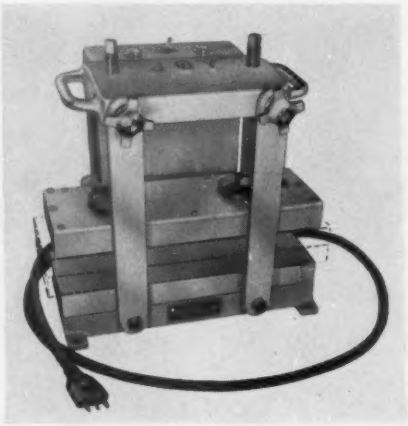
F. E. SCHUNDLER & CO., INC., 504 Railroad St., Joliet, Ill.

to the contour of the installation. It is moisture-proof and resistant to oils and other contaminating agents not corrosive to aluminum. *General Cable Corporation, Dept. RLC, 420 Lexington ave., New York 17.*



Vulcanizing Press

These molding presses for reinsulating and rejacketing natural rubber, synthetic rubber and thermoplastic covered cables, can accommodate standard cable types and sizes with the use of interchangeable aluminum molds. The presses carry a 3,000-watt rating and are available for operation on 7 standard a-c and d-c voltages. Heat from four replaceable strip heaters (two in the top and two in the bottom platen) is applied directly through the molds to areas being vulcanized at molding pressures of up to 25 tons. Twin tie bars can be dropped for front loading and permit using this press to create Y and T splices. *Joy Manufacturing Company, Dept. RLC, 1201 Macklind ave., St. Louis 10.*

Reflective Striping

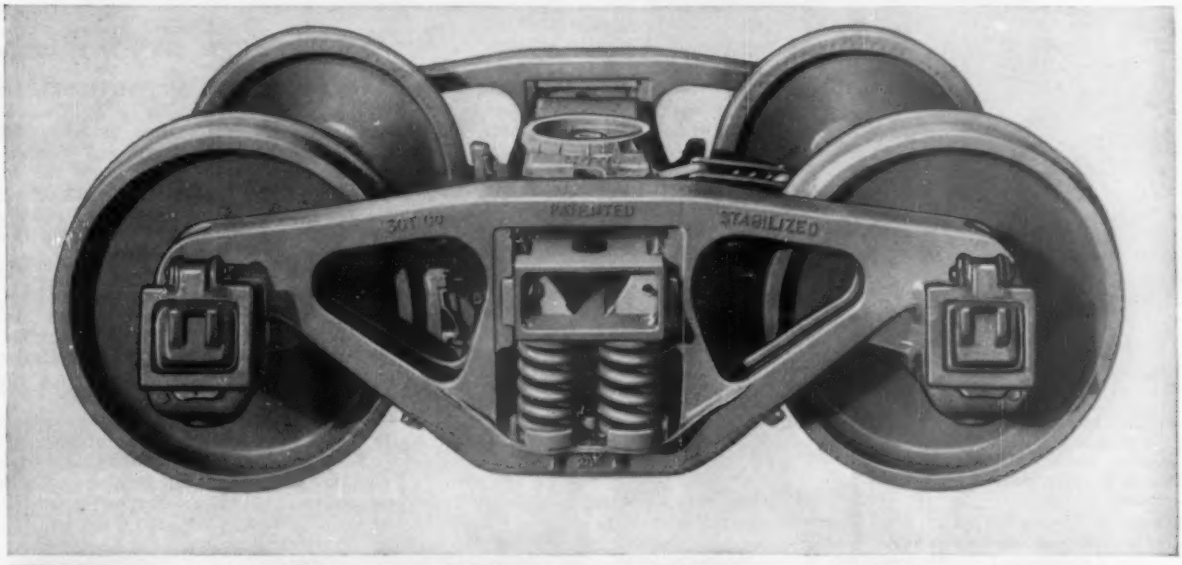
A Scotchlite reflective sheeting, pre-masked to simplify two-ton railroad car and locomotive painting and trim line striping, is a colored striping which is applied to the car before painting. The mask on the face of the striping protects it when the background finish coats of paint are applied. After these background coats are on, the mask is removed from the trim line. The paint thus "edge seals" the reflective sheeting.

The sheeting is also available pre-masked in reporting numbers, letters and insignia. *Minnesota Mining & Mfg. Co., Dept. RLC, 900 Bush st., St. Paul 6, Minn.*

Steel Abrasive

Rotoblast Steel Shot, a steel blast cleaning abrasive, has a narrow hardness range, extreme uniformity, density and toughness. Available in all standard SAE sizes, Rotoblast Steel Shot is manufactured by vacuum cast continuous process of high quality electric furnace alloy steel. It is then heat treated. The abrasive is shipped in 50-lb double burlap bags. *Pangborn Corporation, Dept. RLC, P.O. Box 380, Hagerstown, Md.*

World's Easiest Truck Servicing BEGINS WITH



BARBER
STABILIZED TRUCKS

Less service time and costs add up to important savings. So, experienced freight car designers naturally "Begin With Barber Stabilized Trucks." Because: When necessary to service Barber parts, friction castings, wear plate and side springs are removed and replaced *5 to 10 times faster* than those of other trucks . . . can be inspected at a quick glance. Result of the *more than 475,000 Barber car sets sold,* none has ever worn out!

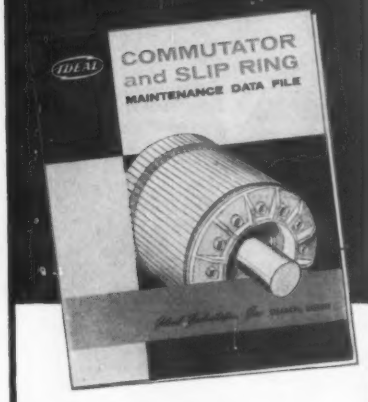
Standard Car Truck Company, 332 South Michigan Avenue, Chicago 4, Illinois. *In Canada:* Consolidated Equipment Company, Ltd., Montreal 2, Quebec.

FREE

NEW SERIES

HOW-TO-DO-IT ARTICLES

on Commutator and Slip Ring Maintenance



Years of experience are packed into this new 6-article series — each an invaluable guide for keeping commutators and slip rings at peak performance.

Each article discusses a major part of the overall problem — gives practical tips on maintenance — tells how to solve common problems — what to do and how to do it — in easily read shop language. Supplied in attractive folder, forming complete maintenance data file.

Designed as useful refresher reading and trouble shooting guidance for the veteran maintenance man . . . and a must for the new man just "breaking in" . . . the entire series has been prepared in close consultation with leading, nation-wide engineering authorities.

Mail the coupon for Article No. 1 now. Don't miss it — the remainder of the series will be sent to you at regular intervals, free and without obligation.

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Everything in equipment and methods for Commutator and Slip Ring Maintenance.

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Please send free folder and article No. 1 of series "Commutator and Slip Ring Maintenance."

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Company_____

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City_____ Zone____ State_____

MANUFACTURERS HELPS FROM

The following compilation of literature—including pamphlets and data sheets—is offered free to railroad men by manufacturers to the railroad industry. To receive the desired information write direct to the manufacturer.

WELDING WIRE. 84-page Aircomatic Welding Wire Pocket Guide (Form ADC 873) has quick and convenient answers to questions about welding wire for use with Airco's gas-shielded metal arc welding process. Presents varieties of wire types and wire diameters and technical data on chemical composition, mechanical properties, and operating procedures. (Write: *Air Reduction Sales Company, a division of Air Reduction Company,* Dept. RLC, 150 East 42nd st., New York 17.)

FLANGE COLLARS. Information sheet describes new 3LC flange collar for use with Huckbolt fasteners. Part number, dimensions, collar material and finish data tabulated. (Write: *Huck Manufacturing Company,* Dept. RLC, 2480 Bellevue ave., Detroit 7.)

MILLING MACHINES. 46-page catalog M-2003 describes completely the Nos. 2, 3 and 4 plain, universal, and vertical Dial Type milling machines. (Write: *Cincinnati Milling Machine Company,* Dept. RLC, Cincinnati 9.)

ALL-PURPOSE FLAT CAR. 10-page booklet describes the PS-4 all-purpose flat car. Details of construction shown in exploded views. (Write: *Pullman-Standard Car Manufacturing Company,* Dept. RLC, 221 North La Salle st., Chicago 1.)

ABRASIVES. 8-page booklet tells how abrasives are used in the railroad industry to step up production and cut grinding and finishing costs. (Write: *Minnesota Mining & Manufacturing Co.,* Dept. RLC, St. Paul 6, Minn.)

COUPLERS. Two charts, printed on heavy stock for display, show progressive steps in the assembly of the Type F and the AAR Type E couplers, respectively, the latter both for rotary and top operation. Coupler parts illustrated. (Write: *National Malleable & Steel Castings Co.,* Dept. RLC, 10600 Quincy ave., Cleveland 6.)

TANK CAR PARTS. Nine-pound parts catalog listing 1,206 tank-car parts, each with a detailed engineering drawing, covers all anticipated replacement needs. For distribution to owners or leasers of ACF tank cars only. (Write: *ACF Industries, Inc.,* Dept. RLC, 30 Church st., New York 8.)

MOTOR NOSE SUPPORT. 4-page Bulletin No. 709 describes a compact, bonded-rubber traction motor nose support for cushioning road shocks and sudden torque impulses. Diagrams explain installation of the units on locomotives. Tabulates applications on current production models of diesel-electric locomotives. (Write: *Lord Manufacturing Company,* Dept.. RLC, Erie, Pa.)

GONDOLA CARS. 4-page bulletin includes specifications and general arrangement drawing of the Greenville GV-4 65-ft 6-in. gondola. Basic specifications on Greenville's other three package cars—flat, cover hopper, and triple hopper—also given. (Write: *Greenville Steel Car Company,* Dept. RLC, Greenville, Pa.)

BATTERIES. Bulletin IT-526/58 covers the use, design, and construction of new line of Explosion-Proof Slyver-Clad batteries for all applications. (Write: *C & D Batteries, Inc.,* Dept. RLC, Washington and Cherry sts., Conshohocken, Pa.)

"THERMALASTIC — THE INSULATION SYSTEM." 12-page booklet (B-7249) describes advantages of Thermalastic insulation for large motors and generators, synchronous condensers, and frequency changers. Charts compare the insulation with asphalt-bonded mica insulation as to power factor, tensile strength, voltage endurance, and dielectric strength, and water-proof characteristics. (Write: *Westinghouse Electric Corporation,* Dept. RLC, P.O. Box 2099, Pittsburgh 30.)

CARBON AND GRAPHITE BRUSHES. 12-page bulletin, "Brushes for Electrical Rotating Machinery," tells how to select the right brush for a specific job and discusses brush materials, brush design, and the Multiflex line of split brushes. Separate sections devoted to brushes for alternating and direct current equipment. (Write: *Speer Carbon Company,* Dept. RLC, St. Marys, Pa.)

LUBRICATION OF ANTI-FRICTION BEARINGS. 30-page booklet describes fundamentals of operation and lubrication of all types of anti-friction bearings. Charts show tolerance standards, load-carrying capacities and minimum bearing life. Methods of applying oil and grease lubrication also shown with operating notes on load carrying capacity and bearing life as affected by vibration, shock, misalignment, high operating temperatures, etc. (Write: *Socony Mobil Oil Company,* Dept. RLC, 150 East 42nd st., New York 17.

LIGHTING VOLTAGE REGULATOR. 4-page bulletin (GEA-6676A) describes new rotary type lighting voltage regulator for railway passenger cars. Contains outline drawing of regulator and a diagram of the regulating system. Typical installation shown. (Write: *General Electric Company,* Dept. RLC, Schenectady 5, N.Y.)

ELECTRIC MOTOR CLEANING. Bulletin "The Cleaning of Electric Motors," contains information on procedures for cleaning motors and generators, hazards present when using solvents, and how to select a safe, efficient solvent. (Write: *Fine Organics, Inc.,* Dept. RLC, 211 East 19th st., New York 3.)

MANIFOLDS FOR GASES.—20 page Form ADC 636D describes complete line of Airco manifolds for gases, with specific information regarding cylinder capacity, cylinder arrangements, and dimensions. (Write: *Air Reduction Sales Company, a division of Air Reduction Company,* Dept. RLC, 150 East 42nd st., New York 17.)

HAND HOISTS. 8-page Bulletin DH-164-C gives specifications, clearances, and dimensions for line of Wright Safety hand hoists, from ½ ton to 50 tons. (Write: *Wright Hoist Division, American Chain & Cable Co.,* Dept. RLC, York Pa.)

America's foremost engineered lettering tools

designed to reduce your present costs 50 to 80%

Used today by 1/3rd of the Nation's leading Railroads . . .

DN

Spray it— STENCILS

PRESSURE SENSITIVE TYPES

Easy to apply. No skill required. Produces the most accurate and durable type of lettering, numerals, medallion, and other types of markings. Adds long life to your identification or advertising on all your equipment . . .

Whatever your lettering problems may be regarding identification, advertising, reflective or non-reflective, the DEMP-NOCK LETTERING SYSTEMS can help you get the job done in less time.

For additional information write Dept. RR-100

THE DEMP-NOCK COMPANY

21433 MOUND ROAD • VAN DYKE, MICHIGAN • U.S.A.

WESTERN LOCOMOTIVE and CAR JACK

lifts capacity

loads easier

WESTERN has made the first major change in Locomotive and Car Journal Jacks by adding TIMKEN tapered thrust roller bearings, replacing ball bearings. This major improvement means reduced friction, greater speed, easier operation and less maintenance . . . available in 25, 35 and 50 ton capacities. Aluminum or malleable steel housings available in 25 or 35 ton models.

8018

Write for Bulletin No. 1957

WRRS WESTERN RAILROAD SUPPLY COMPANY

Division of Western Industries, Inc.

2400-2434 S. Ashland Ave., Chicago 8, Ill.

Slash assembly and repair time on railroad rolling stock

● Whatever the job . . . CL Huckbolts are being used by modern car builders and repair shops to slash assembly time, conserve manpower, and keep the stock rolling.

Driving CL Huckbolts is so simple and easy that 25 can be installed with ONE gun in ONE minute.

With CL Huckbolts you get positive sheet pull-together, no bulbing between sheets and since no human factor is involved in the driving operation, completely uniform tension.

The smooth, flat head and the tension preload properties of the CL Huckbolt make it safe for bagged or packaged lading and prevents water trapping and decay when used for flooring.

Complete information and samples are available from your local Huck Representative—or write . .

HUCK MANUFACTURING COMPANY

2480 BELLEVUE AVE. • DETROIT 7, MICH. • PHONE WALNUT 1-6207

Supply Trade Notes

TURCO PRODUCTS, INC.—*Archie K. Beard* has been appointed general sales manager.

■

GARLOCK PACKING COMPANY.—*Thomas L. Denney,* special assistant to the vice-president - marketing, has been appointed general sales manager.

■

ACF INDUSTRIES, INC.—The executive offices of ACF Industries and its Advanced Products, American Car & Foundry, and Shippers' Car Line Divisions have been removed from 30 Church street, to 750 Third avenue, New York 17.

■

HUNT - SPILLER MANUFACTURING CORPORATION.—Hunt-Spiller has been appointed to handle the exclusive railroad sales for ni-resist ring carriers, also the application of new carriers to used pistons, formerly furnished by the *Ohio Piston & Machining Co.* of Cleveland.

■

UNITED STATES STEEL CORPORATION.—*J. Gardner Brooks,* assistant manager of sales, Chicago, has been appointed manager of sales, Indianapolis, to succeed *Gladstone C. Hill,* transferred to St. Paul, Minn. *Jack R. Scott,* assistant to manager of sales, Chicago, succeeds Mr. Brooks at Chicago.

A. K. Beard

T. L. Denney

R. M. Beswick

W. S. Morris

WESTINGHOUSE AIR BRAKE COMPANY.—*R. M. Beswick,* general sales manager, has been appointed vice-president-sales, Air Brake Division, Wilmerding, Pa. Mr. Beswick has been with Westinghouse Air Brake for 29 years in engineering and sales capacities. in Wilmerding, New York and Washington, where he was district manager before becoming general sales manager in 1956. He is a graduate in mechanical engineering, University of Pittsburgh.

■

DUFF-NORTON COMPANY.—*Donald A. Anderson* has been appointed district sales manager, covering New York State and New England.

■

EX-CELL-O CORPORATION.—*L. Graham Collins* has been appointed a sales representative in the New York-New Jersey area, working with *W. M. Thompson,* district manager.

ALCO PRODUCTS, INC.—*William S. Morris,* executive vice-president, has been elected president, succeeding *Perry T. Egbert,* who has been elected chairman.

Mr. Morris began his career with Alco as a special apprentice at Schenectady in 1922. He was subsequently a sales representative and, later, district manager at Chicago. He was elected vice-president of the Montreal Locomotive Works in 1940 and executive vice-president in 1944. Later in 1944 he was transferred to Alco's New York offices as vice-president.

■

SPERRY PRODUCTS, INC.— *Richard Y. Neiley* has been appointed district sales supervisor, with headquarters in Chicago. Mr. Neiley's name incorrectly appeared with a note on Sperry Rail Service on page 58 of the May issue.

■

PYLE-NATIONAL COMPANY.—*James V. Baker,* Cleveland district manager, has retired.

■

UNION TANK CAR COMPANY.—*J. W. Van Gorkom* and *D. C. Graves* have been elected vice-presidents. Mr. Van Gorkom continues as treasurer.

■

ASSOCIATED RESEARCH, INC.—*Arthur H. Lynch & Associates, Inc.,* have been appointed engineering sales representative for the state of Florida, with headquarters in Ft. Myers, and branch offices in Miami and Gainesville.

■

ALUMINUM COMPANY OF AMERICA.—*B. J. Fletcher,* general manager of engineering, has been elected a vice-president.

■

TIMKEN ROLLER BEARING CO.—New railroad-car roller-bearing plant at Columbus, Ohio, with capacity to produce 20,000 car sets per year, was demonstrated to the business press on May 15. This highly mechanized facility, built at a cost of over $7,000,000, will be described more fully in the July issue.

■

DAYTON RUBBER COMPANY.—*Norman G. Lever* has been appointed sales manager for the Industrial Division at Dayton, Ohio. *Thomas E. Farrell* succeeds Mr. Lever as midwest regional manager, with headquarters in Chicago, and *K. C. Sparks* succeeds *K. L. Harvey* as regional manager for the west coast.

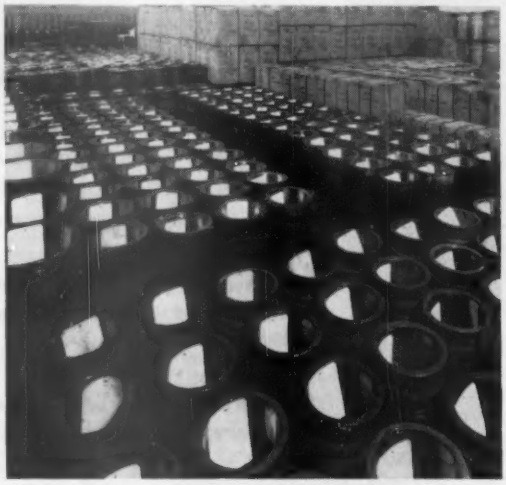
■

AEROQUIP CORPORATION.—*William F. Rogge,* general sales manager of the Industrial Division, has been appointed general manager of the Division, with headquarters at Jackson, Mich.

(*Continued on page 68*)

"Old Timers" among liners are
MECROME PLATED LINERS

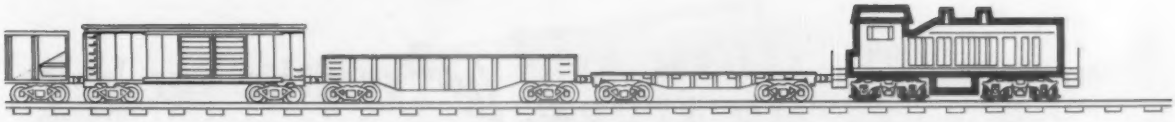
Most "old timers" among liners in service today are Mecrome plated liners! Our unique plating process increases liner life by evenly distributing the pockets that retain the lubricating oil throughout the chromium-plated liner surface. This creates a strong bearing surface, without hard or soft spots and results in long engine life, rapid "break-in" cycles and superior lubrication. Send us a trial order today!

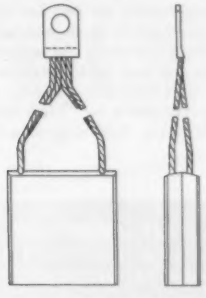


This sea of liners is typical of the thousands of liners being processed continually in the plants of Metal Finishers, Inc.

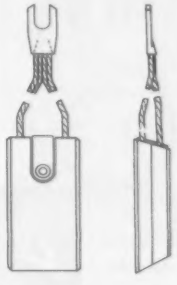
MECROME*
FIGHTS FRICTION TO THE FINISH*

METAL FINISHERS, INC.
1725 E. 27th ST. • CLEVELAND 14, OHIO • TEL.: MAin 1-0511
3125 BRINKERHOFF ROAD • KANSAS CITY, KANSAS
IN CANADA: NATIONAL HARD CHROME PLATING CO. LTD., TORONTO, ONT.

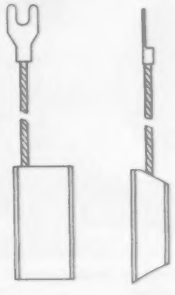




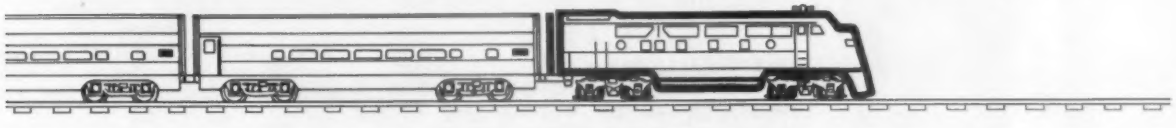
Speer Brush No. 3488-E46
For EMD, MOT.—D7, D17, D27, D37, 716E2, 721 721A2

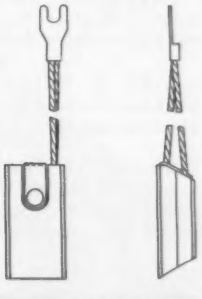


Speer Brush No. 3684-E44
For EMD, GEN.—D12, D15

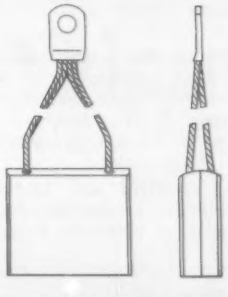


Speer Brush No. 4216-E35
For EMD, AUX GEN. — A3001 A7159
BLOWERS—A7158, A7160, A8101

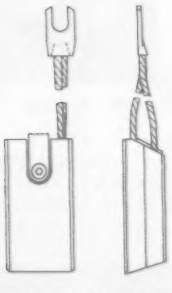




Speer Brush No. 4692-E35
For EMD, AUX GEN — A3001, A7159, A8102
BLOWERS—A7158, A7160, A8101, A8103



Speer Brush No. 3602-E34
For GE, MOT —726 730, 752



Speer Brush No. 3717-E44
For GE, GEN — GT564B1, C1; GT566C1, D1; GT567; GT569; GT576; GT581A1; GT586; GT571

DON'T HAVE A BRUSH WITH TROUBLE... SPECIFY SPEER!

FOR TRACTION MOTORS . . . GENERATORS . . . AUXILIARY GENERATORS . . . BLOWERS

It pays to replace with a genuine SPEER Brush! With Speer brushes for every type diesel-electric locomotive, you're assured of even wear, reduced vibration, improved commutation, longer service life. How do we know? Millions of Speer railroad brushes have proved it Whatever the brush application, there's a Speer Brush that's "just a little better." Write for all the facts...and prices. Send today for your free copy of the informative booklet, BRUSHES FOR ELECTRICAL ROTATING MACHINERY!

SPEER Carbon Co.
St. Marys, Pa.

FLUSH FIT MOISTURE TIGHT..

...WITHOUT COUNTERSINKING

Lewis sealtite car bolts

Each Lewis Sealtite car bolt has special "wood engineering" beveled head for flush, moisture tight, fit . . . without countersinking. Standard and large-head car bolts have patented fins that grip wood, prevent turning . . . slotted head bolt can be set with screwdriver. Available in Hot-Dip galvanized finish for "Long Life Economy," in black for low first cost. Call, write or wire for sample prices.

All products manufactured in the U.S.A. to A.S.T.M. specification.

Lewis BOLT & NUT COMPANY
504 Malcolm Ave. S. E.
MINNEAPOLIS 14, MINNESOTA

LOOK FOR THIS STAMP OF U QUALITY

William E. Olds

W. E. Bikle

STANDARD RAILWAY EQUIPMENT MANUFACTURING COMPANY.—*William E. Olds,* vice-president in charge of sales, has been appointed president and general manager of the railway equipment division. *William E. Bikle* has been named general sales manager.

■

DAYTON RUBBER COMPANY.—Dayton plans to construct a one-story mechanical rubber goods plant in Springfield, Mo. The structure will have a manufacturing area of approximately 175,000 sq ft.

■

STRATOFLEX, INC.—New officers of the company which headquarters at Fort Worth, Tex., are: *K. W. Davis,* president and general manager; *D. H. Thornbury,* vice-president, and *C. A. Thomas,* vice-president - sales.

■

GENERAL AMERICAN TRANSPORTATION COMPANY.—*Piggyback, Inc., producer* of the Clejan or center-sill flatcar specially designed for piggyback service has been purchased by the General American.

Obituary

GEORGE V. SLOTTMAN, vice-president —research and engineering, of Air Reduction Company, died on April 21 at New York.

■

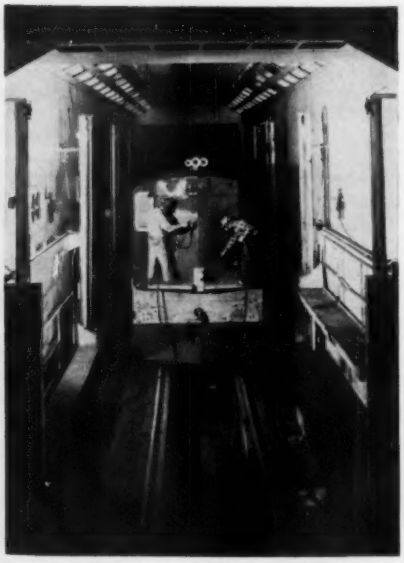
CARLTON F. OWENS, president, International Railway Supply Company died on April 13 at Santa Barbara, Calif.

■

LYLE G. HALL, past president of the Stackpole Carbon Company, died on April 28 at the age of 71.

■

JAMES D. GLENN, former vice-president and general manager of sales for the Crucible Steel Company of America, died on May 8 after a long illness.

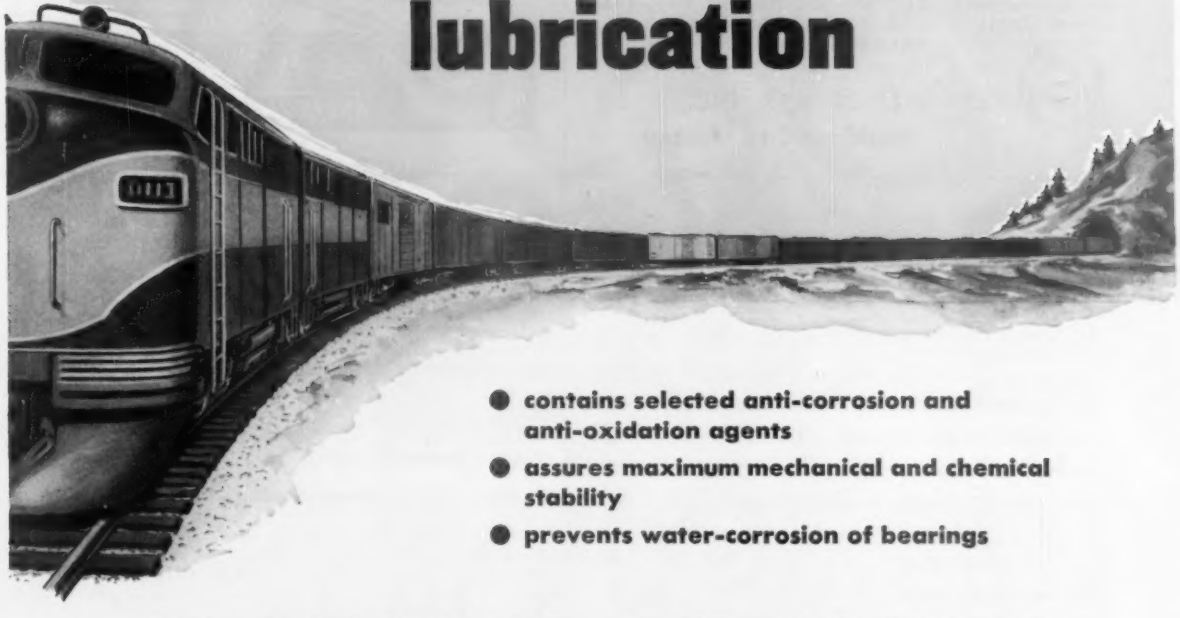


Production-line locomotive assembly has been established by Alco Products in a 1,190-ft building formerly used as the general welding shop at the Schenectady, N. Y., plant. Three straight, multi-station assembly lines and related subassembly areas in Building 62 (left), a special shop area for stripping locomotives returned for remanufacture, and a General Engineering Laboratories Center are all part of the $4,000,000 modernization program. The new set-up made it possible to retire buildings used for steam locomotive manufacture and, at the same time, decrease material-handling requirements while centralizing prefabrication and assembly operations. The new assembly shop is divided into two sections with underframes and side trusses fabricated and assembled at the south end (rear, left), and the complete locomotives then assembled on the three production tracks in the north end (foreground). Completed locomotives then go to paint booths (illustration at right) and load test sections. The new facilities "are tangible evidence of our faith in your future," Alco board chairman P. T. Egbert stated in a message to American railroads in conjunction with the opening of the new facilities.

AAR APPROVED

NEW SHELL ALVANIA GREASE B

for journal roller bearing lubrication



- contains selected anti-corrosion and anti-oxidation agents
- assures maximum mechanical and chemical stability
- prevents water-corrosion of bearings

Developed specifically for railroad service, Shell Alvania Grease B is a new improved lithium 12-hydroxy stearate grease. It has been tested and approved under AAR specification M-917-56 for journal roller bearing lubrication.

Alvania® Grease B is formulated to provide excellent lubrication and eliminate water-corrosion and grease leakage problems.

For more complete technical information on Shell Alvania Grease B, contact your Shell Railroad Service Engineer.

SHELL OIL COMPANY

50 WEST 50TH STREET, NEW YORK 20, N. Y.
624 S. MICHIGAN AVE., CHICAGO 5, ILL., 100 BUSH STREET, SAN FRANCISCO 6, CALIF.

SHELL

EQUIPPED WITH *AIR-PUSH* OF COURSE!

SPRAGUE *AIR-PUSH* WINDSHIELD WIPER MOTORS ARE "STANDARD" IN THE INDUSTRY

First in heavy duty windshield wiping equipment for a quarter century . . . . used on more than 90% of all diesel operated locomotives. *Safety starts with seeing* and Air-Push equipment keeps windshields clear in bad weather. Designed for top performance with minimum maintenance. Air-Push Replacement Kits, and Air-Push Repair Kits immediately available.

WRITE FOR COMPLETE DETAILS!

Sprague DEVICES, INC.,
Michigan City, Indiana

NOW... 2 TORQUE Ranges
(to 900 Foot pounds)

both from one
STURTEVANT
TORQUE WRENCH

Now you can do high torque work with a Sturtevant Torque Wrench of normal capacity range—small in size—light in weight—with fine increment markings and moderately priced.

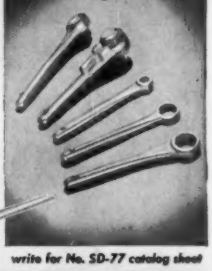
With a new Multi-range, Multi-purpose Adapter you can step up the capacity of your Torque Wrench to a new high range and you can plug in any drive end you want . . . Box wrench, ratchet, drive square for sockets.

All drive end accessories are interchangeable and stock items.

In this way each Sturtevant Torque Wrench effectively equals two complete sets of ordinary single purpose Torque tools.

Only Torque wrenches with the Sturtevant patented pivoted handle can be accurate with adapters.

WIDE CHOICE OF INTERCHANGEABLE DRIVERS



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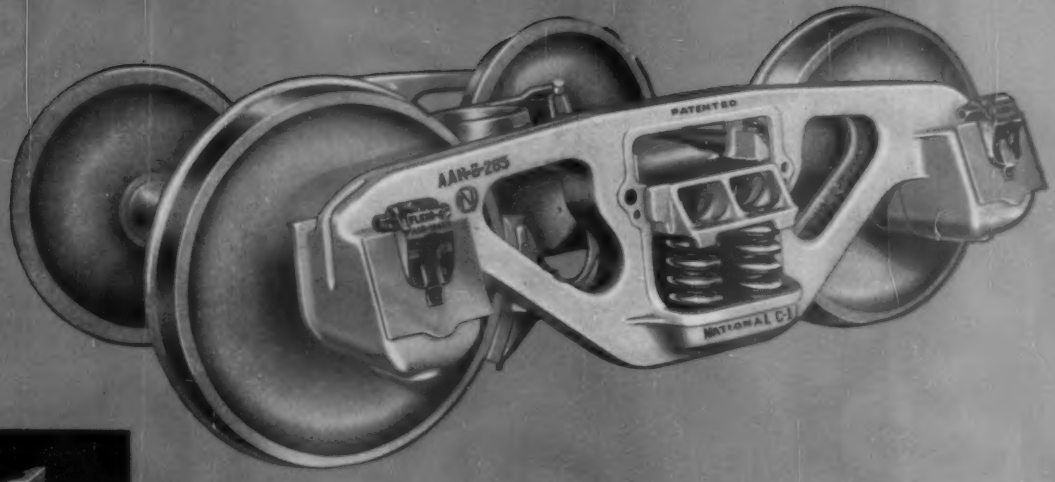

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How many car-miles does "Roller Freight" average per overheated bearing?

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- ☐ *189,000 miles*
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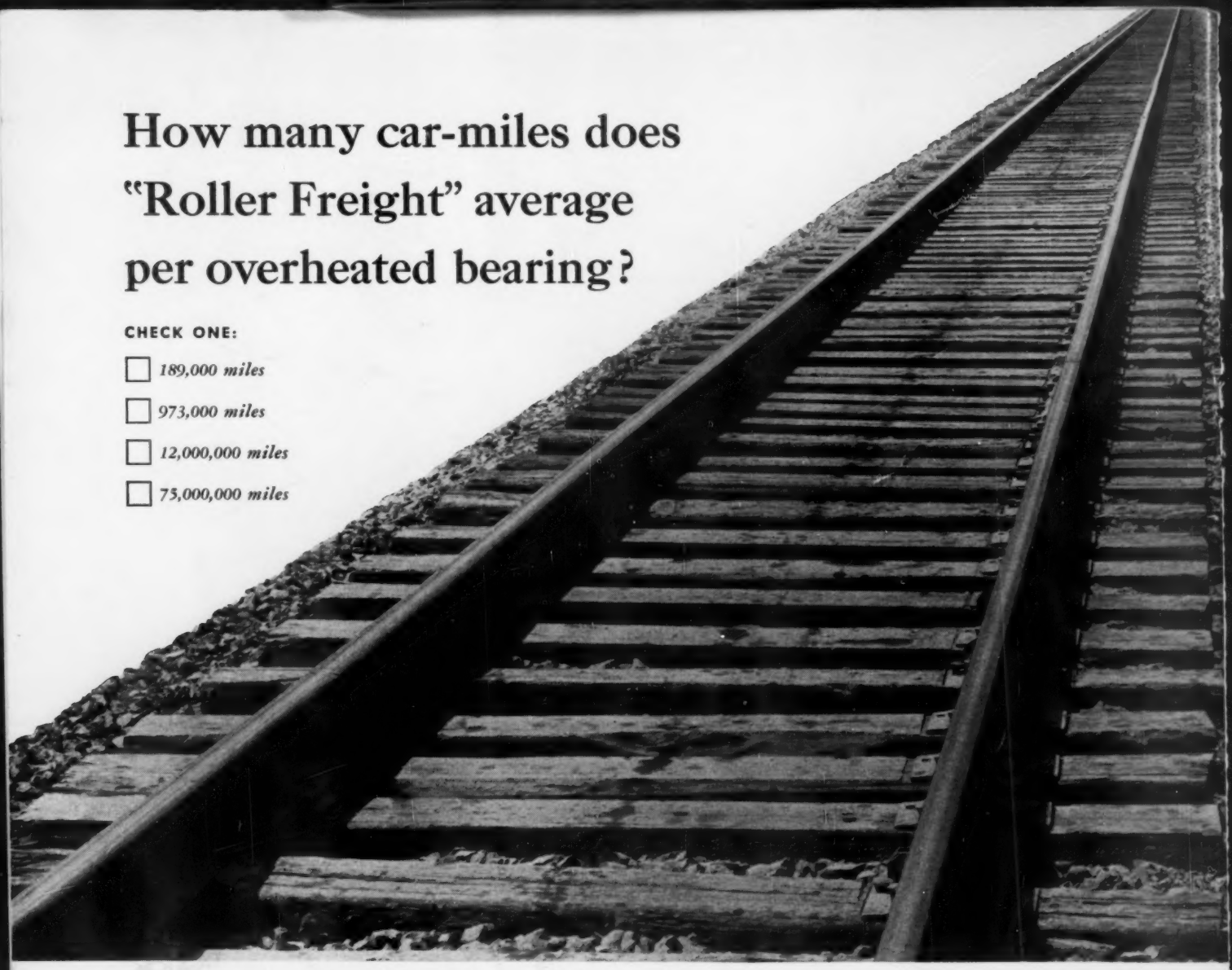
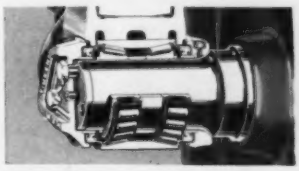


75 *MILLION* CAR-MILES per overheated bearing. That's the average mileage based on reports from railroads using "Roller Freight"—cars on Timken® tapered roller bearings. And one railroad has gone over 300,000,000 car-miles with only one overheated bearing. Friction bearings average only 189 *thousand* car-miles between hot box setouts alone. The mileage per overheated bearing is probably less than 50,000. And even these low mileage figures are shrinking fast.

Timken roller bearings *roll* the load. They eliminate the metal-to-metal sliding that causes friction bearings to get hot. That's the big reason why 67 railroads and private car owners already have over 25,000 "Roller Freight" cars in service or on order. And 52 of these freight car owners are teaming up by putting their "Roller Freight" cars in interchange—a total of over ⅔ of all "Roller Freight" cars.

These railroads are sharing the benefits of "Roller Freight" with other lines to speed the day when all freight is "Roller Freight". The day when the railroads will save an estimated $224,000,000 a year or about $113 per car in maintenance and operating costs—by licking the hot box problem, by cutting terminal bearing inspection time 90%, by cutting lubricant cost as much as 95%.

We'll be glad to show you how much Timken bearings will save on your new equipment. How planned conversion can put your present cars on Timken roller bearings—let you spread the cost over a period of years. Get Timken bearings for your freight cars. More roller bearing cars *roll* on Timken bearings than any other make. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".



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